

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
18 April 2002 (18.04.2002)

PCT

(10) International Publication Number  
**WO 02/30268 A2**

(51) International Patent Classification<sup>7</sup>: **A61B**

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(21) International Application Number: PCT/US01/32045

(22) International Filing Date: 12 October 2001 (12.10.2001)

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(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

09/687,576	13 October 2000 (13.10.2000)	US
09/733,742	8 December 2000 (08.12.2000)	US
09/733,288	8 December 2000 (08.12.2000)	US
60/263,957	24 January 2001 (24.01.2001)	US
60/276,888	16 March 2001 (16.03.2001)	US
60/276,791	16 March 2001 (16.03.2001)	US
60/281,922	6 April 2001 (06.04.2001)	US
60/286,214	24 April 2001 (24.04.2001)	US
09/847,046	30 April 2001 (30.04.2001)	US
60/288,589	4 May 2001 (04.05.2001)	US

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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Published:

— without international search report and to be republished upon receipt of that report

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHODS OF DIAGNOSIS OF PROSTATE CANCER, COMPOSITIONS AND METHODS OF SCREENING FOR MODULATORS OF PROSTATE CANCER

(57) Abstract: Described herein are genes whose expression are up-regulated or down-regulated in prostate cancer. Also described are such genes whose expression is further up-regulated or down-regulated in drug-resistant prostate cancer cells. Related methods and compositions that can be used for diagnosis and treatment of prostate cancer are disclosed. Also described herein are methods that can be used to identify modulators of prostate cancer.

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**METHODS OF DIAGNOSIS OF PROSTATE CANCER,  
COMPOSITIONS AND METHODS OF SCREENING FOR  
MODULATORS OF PROSTATE CANCER**

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**CROSS-REFERENCES TO RELATED APPLICATIONS**

This application claims priority from the following applications: USSN 09/687,576 filed October 13, 2000, USSN 60/276,791 filed March 16, 2001; USSN 60/288,589, filed May 4, 2001; USSN 09/733,742, filed December 8, 2000; USSN 10 09/733,288, filed December 8, 2000; USSN 09/847,046, filed April 30, 2001; USSN 60/276,888, filed March 16, 2001; USSN 60/286,214, filed April 24, 2001; USSN 60/281,922, filed April 6, 2001; USSN 60/263,957, filed January 24, 2001, which are incorporated herein by reference in their entirety.

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**FIELD OF THE INVENTION**

The invention relates to the identification of nucleic acid and protein expression profiles and nucleic acids, products, and antibodies thereto that are involved in prostate cancer; and to the use of such expression profiles and compositions in the diagnosis, prognosis and therapy of prostate cancer. The invention further relates to methods for 20 identifying and using agents and/or targets that inhibit prostate cancer.

**BACKGROUND OF THE INVENTION**

Prostate cancer is the most commonly diagnosed internal malignancy and second most common cause of cancer death in men in the U.S., resulting in approximately 25 40,000 deaths each year ( Landis et al., *CA Cancer J. Clin.* 48:6-29 (1998); Greenlee et al., *CA Cancer J. Clin.* 50(1):7-13 (2000)), and incidence of prostate cancer has been increasing rapidly over the past 20 years in many parts of the world (Nakata et al., *Int. J. Urol.* 7(7):254-257 (2000); Majeed et al., *BJU Int.* 85(9):1058-1062 (2000)). It develops as the



result of a pathologic transformation of normal prostate cells. In tumorigenesis, the cancer cell undergoes initiation, proliferation and loss of contact inhibition, culminating in invasion of surrounding tissue and, ultimately, metastasis.

Deaths from prostate cancer are a result of metastasis of a prostate tumor.

5 Therefore, early detection of the development of prostate cancer is critical in reducing mortality from this disease. Measuring levels of prostate-specific antigen (PSA) has become a very common method for early detection and screening, and may have contributed to the slight decrease in the mortality rate from prostate cancer in recent years (Nowroozi et al., *Cancer Control* 5(6):522-531 (1998)). However, many cases are not diagnosed until the  
10 disease has progressed to an advanced stage.

Treatments such as surgery (prostatectomy), radiation therapy, and cryotherapy are potentially curative when the cancer remains localized to the prostate. Therefore, early detection of prostate cancer is important for a positive prognosis for treatment. Systemic treatment for metastatic prostate cancer is limited to hormone therapy  
15 and chemotherapy. Chemical or surgical castration has been the primary treatment for symptomatic metastatic prostate cancer for over 50 years. This testicular androgen deprivation therapy usually results in stabilization or regression of the disease (in 80% of patients), but progression of metastatic prostate cancer eventually develops (Panvichian et al., *Cancer Control* 3(6):493-500 (1996)). Metastatic disease is currently considered incurable,  
20 and the primary goals of treatment are to prolong survival and improve quality of life (Rago, *Cancer Control* 5(6):513-521 (1998)).

Thus, methods that can be used for diagnosis and prognosis of prostate cancer and effective treatment of prostate cancer, and including particularly metastatic prostate cancer, would be desirable. Accordingly, provided herein are methods that can be used in  
25 diagnosis and prognosis of prostate cancer. Further provided are methods that can be used to screen candidate bioactive agents for the ability to modulate, e.g., treat, prostate cancer. Additionally, provided herein are molecular targets and compositions for therapeutic intervention in prostate cancer and other cancers.

## SUMMARY OF THE INVENTION

The present invention therefore provides nucleotide sequences of genes that are up- and down-regulated in prostate cancer cells. Such genes are useful for diagnostic purposes, and also as targets for screening for therapeutic compounds that modulate prostate cancer, such as hormones or antibodies. Other aspects of the invention will become apparent to the skilled artisan by the following description of the invention.

In one aspect, the present invention provides a method of detecting a prostate cancer-associated transcript in a cell from a patient, the method comprising contacting a biological sample from the patient with a polynucleotide that selectively hybridizes to a sequence at least 80% identical to a sequence as shown in Tables 1-16.

In one embodiment, the present invention provides a method of determining the level of a prostate cancer associated transcript in a cell from a patient.

In one embodiment, the present invention provides a method of detecting a prostate cancer-associated transcript in a cell from a patient, the method comprising contacting a biological sample from the patient with a polynucleotide that selectively hybridizes to a sequence at least 80% identical to a sequence as shown in Tables 1-16.

In one embodiment, the polynucleotide selectively hybridizes to a sequence at least 95% identical to a sequence as shown in Tables 1-16. In another embodiment, the polynucleotide comprises a sequence as shown in Tables 1-16.

In one embodiment, the biological sample is a tissue sample. In another embodiment, the biological sample comprises isolated nucleic acids, e.g., mRNA.

In one embodiment, the polynucleotide is labeled, e.g., with a fluorescent label.

In one embodiment, the polynucleotide is immobilized on a solid surface.

In one embodiment, the patient is undergoing a therapeutic regimen to treat prostate cancer. In another embodiment, the patient is suspected of having metastatic prostate cancer.

In one embodiment, the patient is a human.

In one embodiment, the patient is suspected of having a taxol-resistant cancer.

In one embodiment, the prostate cancer associated transcript is mRNA.

In one embodiment, the method further comprises the step of amplifying nucleic acids before the step of contacting the biological sample with the polynucleotide.

In another aspect, the present invention provides a method of monitoring the efficacy of a therapeutic treatment of prostate cancer, the method comprising the steps of: (i) providing a biological sample from a patient undergoing the therapeutic treatment; and (ii) determining the level of a prostate cancer-associated transcript in the biological sample by contacting the biological sample with a polynucleotide that selectively hybridizes to a sequence at least 80% identical to a sequence as shown in Tables 1-16, thereby monitoring the efficacy of the therapy. In a further embodiment, the patient has metastatic prostate cancer. In a further embodiment, the patient has a drug resistant (e.g., taxol resistant) form of prostate cancer.

In one embodiment, the method further comprises the step of: (iii) comparing the level of the prostate cancer-associated transcript to a level of the prostate cancer-associated transcript in a biological sample from the patient prior to, or earlier in, the therapeutic treatment.

Additionally, provided herein is a method of evaluating the effect of a candidate prostate cancer drug comprising administering the drug to a patient and removing a cell sample from the patient. The expression profile of the cell is then determined. This method may further comprise comparing the expression profile to an expression profile of a healthy individual. In a preferred embodiment, said expression profile includes a gene of Tables 1-16.

In one aspect, the present invention provides an isolated nucleic acid molecule consisting of a polynucleotide sequence as shown in Tables 1-16.

In one embodiment, an expression vector or cell comprises the isolated nucleic acid.

In one aspect, the present invention provides an isolated polypeptide which is encoded by a nucleic acid molecule having polynucleotide sequence as shown in Tables 1-16.

In another aspect, the present invention provides an antibody that specifically binds to an isolated polypeptide which is encoded by a nucleic acid molecule having polynucleotide sequence as shown in Tables 1-16.

In one embodiment, the antibody is conjugated to an effector component, e.g., a fluorescent label, a radioisotope or a cytotoxic chemical.

In one embodiment, the antibody is an antibody fragment. In another embodiment, the antibody is humanized.

5 In one aspect, the present invention provides a method of detecting a prostate cancer cell in a biological sample from a patient, the method comprising contacting the biological sample with an antibody as described herein.

In another aspect, the present invention provides a method of detecting antibodies specific to prostate cancer in a patient, the method comprising contacting a  
10 biological sample from the patient with a polypeptide encoded by a nucleic acid comprising a sequence from Tables 1-16.

In another aspect, the present invention provides a method for identifying a compound that modulates a prostate cancer-associated polypeptide, the method comprising the steps of: (i) contacting the compound with a prostate cancer-associated polypeptide, the  
15 polypeptide encoded by a polynucleotide that selectively hybridizes to a sequence at least 80% identical to a sequence as shown in Tables 1-16; and (ii) determining the functional effect of the compound upon the polypeptide.

In one embodiment, the functional effect is a physical effect, an enzymatic effect, or a chemical effect.

20 In one embodiment, the polypeptide is expressed in a eukaryotic host cell or cell membrane. In another embodiment, the polypeptide is recombinant.

In one embodiment, the functional effect is determined by measuring ligand binding to the polypeptide.

In another aspect, the present invention provides a method of inhibiting  
25 proliferation of a prostate cancer-associated cell to treat prostate cancer in a patient, the method comprising the step of administering to the subject a therapeutically effective amount of a compound identified as described herein.

In one embodiment, the compound is an antibody.

In another aspect, the present invention provides a drug screening assay  
30 comprising the steps of: (i) administering a test compound to a mammal having prostate cancer or to a cell sample isolated therefrom; (ii) comparing the level of gene expression of a

polynucleotide that selectively hybridizes to a sequence at least 80% identical to a sequence as shown in Tables 1-16 in a treated cell or mammal with the level of gene expression of the polynucleotide in a control cell sample or mammal, wherein a test compound that modulates the level of expression of the polynucleotide is a candidate for the treatment of prostate  
5 cancer.

In one embodiment, the control is a mammal with prostate cancer or a cell sample therefrom that has not been treated with the test compound. In another embodiment, the control is a normal cell or mammal.

In one embodiment, the test compound is administered in varying amounts or  
10 concentrations. In another embodiment, the test compound is administered for varying time periods. In another embodiment, the comparison can occur after addition or removal of the drug candidate.

In one embodiment, the levels of a plurality of polynucleotides that selectively hybridize to a sequence at least 80% identical to a sequence as shown in Tables 1-16 are  
15 individually compared to their respective levels in a control cell sample or mammal. In a preferred embodiment the plurality of polynucleotides is from three to ten.

In another aspect, the present invention provides a method for treating a mammal having prostate cancer comprising administering a compound identified by the assay described herein.

20 In another aspect, the present invention provides a pharmaceutical composition for treating a mammal having prostate cancer, the composition comprising a compound identified by the assay described herein and a physiologically acceptable excipient.

In one aspect, the present invention provides a method of screening drug  
25 candidates by providing a cell expressing a gene that is up- and down-regulated as in a prostate cancer. In one embodiment, a gene is selected from Tables 1-16. The method further includes adding a drug candidate to the cell and determining the effect of the drug candidate on the expression of the expression profile gene.

In one embodiment, the method of screening drug candidates includes  
30 comparing the level of expression in the absence of the drug candidate to the level of expression in the presence of the drug candidate, wherein the concentration of the drug

candidate can vary when present, and wherein the comparison can occur after addition or removal of the drug candidate. In a preferred embodiment, the cell expresses at least two expression profile genes. The profile genes may show an increase or decrease.

Also provided is a method of evaluating the effect of a candidate prostate cancer drug comprising administering the drug to a transgenic animal expressing or  
5 over-expressing the prostate cancer modulatory protein, or an animal lacking the prostate cancer modulatory protein, for example as a result of a gene knockout.

Moreover, provided herein is a biochip comprising one or more nucleic acid segments of Tables 1-16, wherein the biochip comprises fewer than 1000 nucleic acid probes.  
10 Preferably, at least two nucleic acid segments are included. More preferably, at least three nucleic acid segments are included.

Furthermore, a method of diagnosing a disorder associated with prostate cancer is provided. The method comprises determining the expression of a gene of Tables 1-16, in a first tissue type of a first individual, and comparing the distribution to the expression  
15 of the gene from a second normal tissue type from the first individual or a second unaffected individual. A difference in the expression indicates that the first individual has a disorder associated with prostate cancer.

In a further embodiment, the biochip also includes a polynucleotide sequence of a gene that is not up- and down-regulated in prostate cancer.

20 In one embodiment a method for screening for a bioactive agent capable of interfering with the binding of a prostate cancer modulating protein (prostate cancer modulatory protein) or a fragment thereof and an antibody which binds to said prostate cancer modulatory protein or fragment thereof. In a preferred embodiment, the method comprises combining a prostate cancer modulatory protein or fragment thereof, a candidate  
25 bioactive agent and an antibody which binds to said prostate cancer modulatory protein or fragment thereof. The method further includes determining the binding of said prostate cancer modulatory protein or fragment thereof and said antibody. Wherein there is a change in binding, an agent is identified as an interfering agent. The interfering agent can be an agonist or an antagonist. Preferably, the agent inhibits prostate cancer.

30 Also provided herein are methods of eliciting an immune response in an individual. In one embodiment a method provided herein comprises administering to an

individual a composition comprising a prostate cancer modulating protein, or a fragment thereof. In another embodiment, the protein is encoded by a nucleic acid selected from those of Tables 1-16.

Further provided herein are compositions capable of eliciting an immune  
5 response in an individual. In one embodiment, a composition provided herein comprises a prostate cancer modulating protein, preferably encoded by a nucleic acid of Tables 1-16, or a fragment thereof, and a pharmaceutically acceptable carrier. In another embodiment, said composition comprises a nucleic acid comprising a sequence encoding a prostate cancer  
10 modulating protein, preferably selected from the nucleic acids of Tables 1-16, and a pharmaceutically acceptable carrier.

Also provided are methods of neutralizing the effect of a prostate cancer protein, or a fragment thereof, comprising contacting an agent specific for said protein with said protein in an amount sufficient to effect neutralization. In another embodiment, the protein is encoded by a nucleic acid selected from those of Tables 1-16.

15 In another aspect of the invention, a method of treating an individual for prostate cancer is provided. In one embodiment, the method comprises administering to said individual an inhibitor of a prostate cancer modulating protein. In another embodiment, the method comprises administering to a patient having prostate cancer an antibody to a prostate cancer modulating protein conjugated to a therapeutic moiety. Such a therapeutic moiety can  
20 be a cytotoxic agent or a radioisotope.

### DETAILED DESCRIPTION OF THE INVENTION

In accordance with the objects outlined above, the present invention provides novel methods for diagnosis and prognosis evaluation for prostate cancer (PC), including  
25 metastatic prostate cancer, as well as methods for screening for compositions which modulate prostate cancer. Also provided are methods for treating prostate cancer.

In addition to the other nucleic acid and peptide sequences, the present invention also relates to the identification of PAA2 as a gene that is highly over expressed in prostate cancer patient tissues. PAA2 sequence is identical to the zinc transporter ZNT4.  
30 Results presented herein demonstrate that PAA2/ZNT4 is highly expressed in prostate cancer cells. The prostate gland is unique in that it has the highest capacity of any organ in the body

to accumulate zinc. Zinc uptake is regulated by prolactin and testosterone, which induce the expression of a member of the ZIP family of zinc transporters (Costello et al., 1999, J. Biol. Chem. 274:17499-17504). Zinc accumulation in the prostate functions to inhibit citrate oxidation, which results in a decrease in cellular ATP production (Costello and Franklin, 5 1998, Prostate 35:285-296). Cancer cells are more sensitive to decreased ATP production and have evolved to prevent zinc accumulation. Without wishing to be bound by theory, the up-regulation of ZNT4 in prostate cancer cells may result in protection of the cells from high zinc levels by its ability to pump accumulated zinc out of the cells.

The present invention also relates to nucleic acid sequences encoding PBH1. 10 PBH1 is related to human TRPC7 (transient receptor potential-related channels, NP\_003298), a putative calcium channel highly expressed in brain (Nagamine et al., Genomics 54:124-131 (1998)). Trp is related to melastatin, a gene down-regulated in metastatic melanomas (Duncan et al., Cancer Res. 58:1515-1520 (1998)), and MTR1, a gene localized to within the Beckwith-Wiedemann syndrome/Wilm's tumor susceptibility region (Prawitt et al., Hum. 15 Mol. Genet. 9:203-216 (2000)). Without wishing to be bound by theory, it is believed that PBH1 functions as a calcium channel.

As a calcium channel, PBH1 is an ideal target for a small molecule therapeutic, or a therapeutic antibody that disrupts channel function. CD20, the target of 20 Rituximab in non-Hodgkin's lymphoma (Maloney et al., Blood 90:2188-2195 (1997); Leget and Czuczman, Curr. Opin. Oncol. 10:548-551 (1998)), is a plasma membrane calcium channel expressed in B cells (Tedder and Engel, Immunol. Today 15:450-454 (1994)). Similarly, a small molecule, or antibody that inhibits or alters a calcium signal mediated by PBH1, will result in the death of prostate cancer cells.

PBH1, and other genes of the invention, are also be useful as targets for 25 cytotoxic T-lymphocytes. Genes that are tumor specific, or that are expressed in immune-privileged organs, are currently being used as potential vaccine targets (Van den Eynde and Boon, Int. J. Clin. Lab. Res. 27:81-86 (1997)). The expression pattern of PBH1 indicates that it is an ideal target for cytotoxic T-lymphocytes. Thus, therapies that utilize PBH1-specific cytotoxic T-lymphocytes to induce prostate cancer cell death are also provided by this 30 invention. See, e.g., U.S. Patent No. 6,051,227 and WO 00/32231, the disclosures of which are herein incorporated by reference.



The present invention is also related to the identification of PAA3 as a gene that is important in the modulation of prostate cancer and or breast cancer.

Tables 1-16 provide unigene cluster identification numbers, exemplar accession numbers, or genomic nucleotide position numbers for the nucleotide sequence of  
5 genes that exhibit increased or decreased expression in prostate cancer samples.

### Definitions

The term "prostate cancer protein" or "prostate cancer polynucleotide" or "prostate cancer-associated transcript" refers to nucleic acid and polypeptide polymorphic  
10 variants, alleles, mutants, and interspecies homologues that: (1) have a nucleotide sequence that has greater than about 60% nucleotide sequence identity, 65%, 70%, 75%, 80%, 85%, 90%, preferably 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98% or 99% or greater nucleotide sequence identity, preferably over a region of over a region of at least about 25, 50, 100, 200, 500, 1000, or more nucleotides, to a nucleotide sequence of or associated with a unigene  
15 cluster of Tables 1-16; (2) bind to antibodies, e.g., polyclonal antibodies, raised against an immunogen comprising an amino acid sequence encoded by a nucleotide sequence of or associated with a unigene cluster of Tables 1-16, and conservatively modified variants thereof; (3) specifically hybridize under stringent hybridization conditions to a nucleic acid sequence, or the complement thereof of Tables 1-16 and conservatively modified variants  
20 thereof or (4) have an amino acid sequence that has greater than about 60% amino acid sequence identity, 65%, 70%, 75%, 80%, 85%, 90%, preferably 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98% or 99% or greater amino sequence identity, preferably over a region of over a region of at least about 25, 50, 100, 200, 500, 1000, or more amino acid, to an amino acid sequence encoded by a nucleotide sequence of or associated with a unigene cluster of Tables  
25 1-16. A polynucleotide or polypeptide sequence is typically from a mammal including, but not limited to, primate, e.g., human; rodent, e.g., rat, mouse, hamster; cow, pig, horse, sheep, or other mammal. A "prostate cancer polypeptide" and a "prostate cancer polynucleotide," include both naturally occurring or recombinant forms.

A "full length" prostate cancer protein or nucleic acid refers to a prostate  
30 cancer polypeptide or polynucleotide sequence, or a variant thereof, that contains all of the elements normally contained in one or more naturally occurring, wild type prostate cancer

polynucleotide or polypeptide sequences. For example, a full length prostate cancer nucleic acid will typically comprise all of the exons that encode for the full length, naturally occurring protein. The "full length" may be prior to, or after, various stages of post-translation processing or splicing, including alternative splicing.

5                "Biological sample" as used herein is a sample of biological tissue or fluid that contains nucleic acids or polypeptides, e.g., of a prostate cancer protein, polynucleotide or transcript. Such samples include, but are not limited to, tissue isolated from primates, e.g., humans, or rodents, e.g., mice, and rats. Biological samples may also include sections of tissues such as biopsy and autopsy samples, frozen sections taken for histologic purposes,  
10 blood, plasma, serum, sputum, stool, tears, mucus, hair, skin, etc. Biological samples also include explants and primary and/or transformed cell cultures derived from patient tissues. A biological sample is typically obtained from a eukaryotic organism, most preferably a mammal such as a primate e.g., chimpanzee or human; cow; dog; cat; a rodent, e.g., guinea pig, rat, mouse; rabbit; or a bird; reptile; or fish.

15                "Providing a biological sample" means to obtain a biological sample for use in methods described in this invention. Most often, this will be done by removing a sample of cells from an animal, but can also be accomplished by using previously isolated cells (e.g., isolated by another person, at another time, and/or for another purpose), or by performing the methods of the invention *in vivo*. Archival tissues, having treatment or outcome history, will  
20 be particularly useful.

              The terms "identical" or percent "identity," in the context of two or more nucleic acids or polypeptide sequences, refer to two or more sequences or subsequences that are the same or have a specified percentage of amino acid residues or nucleotides that are the same (i.e., about 60% identity, preferably 70%, 75%, 80%, 85%, 90%, 91%, 92%, 93%, 94%,  
25 95%, 96%, 97%, 98%, 99%, or higher identity over a specified region, when compared and aligned for maximum correspondence over a comparison window or designated region) as measured using a BLAST or BLAST 2.0 sequence comparison algorithms with default parameters described below, or by manual alignment and visual inspection (*see, e.g.*, NCBI web site <http://www.ncbi.nlm.nih.gov/BLAST/> or the like). Such sequences are then said to  
30 be "substantially identical." This definition also refers to, or may be applied to, the complement of a test sequence. The definition also includes sequences that have deletions

and/or additions, as well as those that have substitutions, as well as naturally occurring, e.g., polymorphic or allelic variants, and man-made variants. As described below, the preferred algorithms can account for gaps and the like. Preferably, identity exists over a region that is at least about 25 amino acids or nucleotides in length, or more preferably over a region that is

5 50-100 amino acids or nucleotides in length.

For sequence comparison, typically one sequence acts as a reference sequence, to which test sequences are compared. When using a sequence comparison algorithm, test and reference sequences are entered into a computer, subsequence coordinates are designated, if necessary, and sequence algorithm program parameters are designated. Preferably, default

10 program parameters can be used, or alternative parameters can be designated. The sequence comparison algorithm then calculates the percent sequence identities for the test sequences relative to the reference sequence, based on the program parameters.

A "comparison window", as used herein, includes reference to a segment of one of the number of contiguous positions selected from the group consisting typically of

15 from 20 to 600, usually about 50 to about 200, more usually about 100 to about 150 in which a sequence may be compared to a reference sequence of the same number of contiguous positions after the two sequences are optimally aligned. Methods of alignment of sequences for comparison are well-known in the art. Optimal alignment of sequences for comparison can be conducted, e.g., by the local homology algorithm of Smith & Waterman, *Adv. Appl. Math.* 2:482 (1981), by the homology alignment algorithm of Needleman & Wunsch, *J. Mol. Biol.* 48:443 (1970), by the search for similarity method of Pearson & Lipman, *Proc. Nat'l. Acad. Sci. USA* 85:2444 (1988), by computerized implementations of these algorithms (GAP, BESTFIT, FASTA, and TFASTA in the Wisconsin Genetics Software Package, Genetics Computer Group, 575 Science Dr., Madison, WI), or by manual alignment and

20 visual inspection (*see, e.g., Current Protocols in Molecular Biology* (Ausubel *et al.*, eds. 1995 supplement)).

Preferred examples of algorithms that are suitable for determining percent sequence identity and sequence similarity include the BLAST and BLAST 2.0 algorithms, which are described in Altschul *et al.*, *Nuc. Acids Res.* 25:3389-3402 (1997) and Altschul *et al.*, *J. Mol. Biol.* 215:403-410 (1990). BLAST and BLAST 2.0 are used, with the parameters

30 described herein, to determine percent sequence identity for the nucleic acids and proteins of

the invention. Software for performing BLAST analyses is publicly available through the National Center for Biotechnology Information (<http://www.ncbi.nlm.nih.gov/>). This algorithm involves first identifying high scoring sequence pairs (HSPs) by identifying short words of length  $W$  in the query sequence, which either match or satisfy some positive-valued threshold score  $T$  when aligned with a word of the same length in a database sequence.  $T$  is referred to as the neighborhood word score threshold (Altschul *et al.*, *supra*). These initial neighborhood word hits act as seeds for initiating searches to find longer HSPs containing them. The word hits are extended in both directions along each sequence for as far as the cumulative alignment score can be increased. Cumulative scores are calculated using, e.g., for nucleotide sequences, the parameters  $M$  (reward score for a pair of matching residues; always  $> 0$ ) and  $N$  (penalty score for mismatching residues; always  $< 0$ ). For amino acid sequences, a scoring matrix is used to calculate the cumulative score. Extension of the word hits in each direction are halted when: the cumulative alignment score falls off by the quantity  $X$  from its maximum achieved value; the cumulative score goes to zero or below, due to the accumulation of one or more negative-scoring residue alignments; or the end of either sequence is reached. The BLAST algorithm parameters  $W$ ,  $T$ , and  $X$  determine the sensitivity and speed of the alignment. The BLASTN program (for nucleotide sequences) uses as defaults a wordlength ( $W$ ) of 11, an expectation ( $E$ ) of 10,  $M=5$ ,  $N=-4$  and a comparison of both strands. For amino acid sequences, the BLASTP program uses as defaults a wordlength of 3, and expectation ( $E$ ) of 10, and the BLOSUM62 scoring matrix (see Henikoff & Henikoff, *Proc. Natl. Acad. Sci. USA* 89:10915 (1989)) alignments ( $B$ ) of 50, expectation ( $E$ ) of 10,  $M=5$ ,  $N=-4$ , and a comparison of both strands.

The BLAST algorithm also performs a statistical analysis of the similarity between two sequences (see, e.g., Karlin & Altschul, *Proc. Nat'l. Acad. Sci. USA* 90:5873-5787 (1993)). One measure of similarity provided by the BLAST algorithm is the smallest sum probability ( $P(N)$ ), which provides an indication of the probability by which a match between two nucleotide or amino acid sequences would occur by chance. For example, a nucleic acid is considered similar to a reference sequence if the smallest sum probability in a comparison of the test nucleic acid to the reference nucleic acid is less than about 0.2, more preferably less than about 0.01, and most preferably less than about 0.001. Log values may be large negative numbers, e.g., 5, 10, 20, 30, 40, 40, 70, 90, 110, 150, 170, etc.

An indication that two nucleic acid sequences or polypeptides are substantially identical is that the polypeptide encoded by the first nucleic acid is immunologically cross reactive with the antibodies raised against the polypeptide encoded by the second nucleic acid, as described below. Thus, a polypeptide is typically substantially identical to a second polypeptide, e.g., where the two peptides differ only by conservative substitutions. Another indication that two nucleic acid sequences are substantially identical is that the two molecules or their complements hybridize to each other under stringent conditions, as described below. Yet another indication that two nucleic acid sequences are substantially identical is that the same primers can be used to amplify the sequences.

A "host cell" is a naturally occurring cell or a transformed cell that contains an expression vector and supports the replication or expression of the expression vector. Host cells may be cultured cells, explants, cells *in vivo*, and the like. Host cells may be prokaryotic cells such as *E. coli*, or eukaryotic cells such as yeast, insect, amphibian, or mammalian cells such as CHO, HeLa, and the like (*see, e.g.*, the American Type Culture Collection catalog or web site, [www.atcc.org](http://www.atcc.org)).

The terms "isolated," "purified," or "biologically pure" refer to material that is substantially or essentially free from components that normally accompany it as found in its native state. Purity and homogeneity are typically determined using analytical chemistry techniques such as polyacrylamide gel electrophoresis or high performance liquid chromatography. A protein or nucleic acid that is the predominant species present in a preparation is substantially purified. In particular, an isolated nucleic acid is separated from some open reading frames that naturally flank the gene and encode proteins other than protein encoded by the gene. The term "purified" in some embodiments denotes that a nucleic acid or protein gives rise to essentially one band in an electrophoretic gel. Preferably, it means that the nucleic acid or protein is at least 85% pure, more preferably at least 95% pure, and most preferably at least 99% pure. "Purify" or "purification" in other embodiments means removing at least one contaminant from the composition to be purified. In this sense, purification does not require that the purified compound be homogenous, e.g., 100% pure.

The terms "polypeptide," "peptide" and "protein" are used interchangeably herein to refer to a polymer of amino acid residues. The terms apply to amino acid polymers in which one or more amino acid residue is an artificial chemical mimetic of a corresponding

naturally occurring amino acid, as well as to naturally occurring amino acid polymers, those containing modified residues, and non-naturally occurring amino acid polymer.

The term "amino acid" refers to naturally occurring and synthetic amino acids, as well as amino acid analogs and amino acid mimetics that function similarly to the naturally occurring amino acids. Naturally occurring amino acids are those encoded by the genetic code, as well as those amino acids that are later modified, e.g., hydroxyproline,  $\gamma$ -carboxyglutamate, and O-phosphoserine. Amino acid analogs refers to compounds that have the same basic chemical structure as a naturally occurring amino acid, e.g., an  $\alpha$  carbon that is bound to a hydrogen, a carboxyl group, an amino group, and an R group, e.g., homoserine, norleucine, methionine sulfoxide, methionine methyl sulfonium. Such analogs may have modified R groups (e.g., norleucine) or modified peptide backbones, but retain the same basic chemical structure as a naturally occurring amino acid. Amino acid mimetics refers to chemical compounds that have a structure that is different from the general chemical structure of an amino acid, but that functions similarly to a naturally occurring amino acid.

Amino acids may be referred to herein by either their commonly known three letter symbols or by the one-letter symbols recommended by the IUPAC-IUB Biochemical Nomenclature Commission. Nucleotides, likewise, may be referred to by their commonly accepted single-letter codes.

"Conservatively modified variants" applies to both amino acid and nucleic acid sequences. With respect to particular nucleic acid sequences, conservatively modified variants refers to those nucleic acids which encode identical or essentially identical amino acid sequences, or where the nucleic acid does not encode an amino acid sequence, to essentially identical or associated, e.g., naturally contiguous, sequences. Because of the degeneracy of the genetic code, a large number of functionally identical nucleic acids encode most proteins. For instance, the codons GCA, GCC, GCG and GCU all encode the amino acid alanine. Thus, at every position where an alanine is specified by a codon, the codon can be altered to another of the corresponding codons described without altering the encoded polypeptide. Such nucleic acid variations are "silent variations," which are one species of conservatively modified variations. Every nucleic acid sequence herein which encodes a polypeptide also describes silent variations of the nucleic acid. One of skill will recognize that in certain contexts each codon in a nucleic acid (except AUG, which is ordinarily the

only codon for methionine, and TGG, which is ordinarily the only codon for tryptophan) can be modified to yield a functionally identical molecule. Accordingly, often silent variations of a nucleic acid which encodes a polypeptide is implicit in a described sequence with respect to the expression product, but not with respect to actual probe sequences.

- 5                   As to amino acid sequences, one of skill will recognize that individual substitutions, deletions or additions to a nucleic acid, peptide, polypeptide, or protein sequence which alters, adds or deletes a single amino acid or a small percentage of amino acids in the encoded sequence is a "conservatively modified variant" where the alteration results in the substitution of an amino acid with a chemically similar amino acid.
- 10   Conservative substitution tables providing functionally similar amino acids are well known in the art. Such conservatively modified variants are in addition to and do not exclude polymorphic variants, interspecies homologs, and alleles of the invention. typically conservative substitutions for one another: 1) Alanine (A), Glycine (G); 2) Aspartic acid (D), Glutamic acid (E); 3) Asparagine (N), Glutamine (Q); 4) Arginine (R), Lysine (K); 5)
- 15   Isoleucine (I), Leucine (L), Methionine (M), Valine (V); 6) Phenylalanine (F), Tyrosine (Y), Tryptophan (W); 7) Serine (S), Threonine (T); and 8) Cysteine (C), Methionine (M) (*see, e.g., Creighton, Proteins* (1984)).

- Macromolecular structures such as polypeptide structures can be described in terms of various levels of organization. For a general discussion of this organization, *see,*
- 20   *e.g., Alberts et al., Molecular Biology of the Cell* (3<sup>rd</sup> ed., 1994) and Cantor & Schimmel, *Biophysical Chemistry Part I: The Conformation of Biological Macromolecules* (1980). "Primary structure" refers to the amino acid sequence of a particular peptide. "Secondary structure" refers to locally ordered, three dimensional structures within a polypeptide. These structures are commonly known as domains. Domains are portions of a polypeptide that
- 25   often form a compact unit of the polypeptide and are typically 25 to approximately 500 amino acids long. Typical domains are made up of sections of lesser organization such as stretches of  $\beta$ -sheet and  $\alpha$ -helices. "Tertiary structure" refers to the complete three dimensional structure of a polypeptide monomer. "Quaternary structure" refers to the three dimensional structure formed, usually by the noncovalent association of independent tertiary
- 30   units. Anisotropic terms are also known as energy terms.

"Nucleic acid" or "oligonucleotide" or "polynucleotide" or grammatical equivalents used herein means at least two nucleotides covalently linked together.

Oligonucleotides are typically from about 5, 6, 7, 8, 9, 10, 12, 15, 25, 30, 40, 50 or more nucleotides in length, up to about 100 nucleotides in length. Nucleic acids and

- 5 polynucleotides are a polymers of any length, including longer lengths, e.g., 200, 300, 500, 1000, 2000, 3000, 5000, 7000, 10,000, etc. A nucleic acid of the present invention will generally contain phosphodiester bonds, although in some cases, nucleic acid analogs are included that may have alternate backbones, comprising, e.g., phosphoramidate, phosphorothioate, phosphorodithioate, or O-methylphosphoroamidite linkages (see Eckstein, 10 Oligonucleotides and Analogues: A Practical Approach, Oxford University Press); and peptide nucleic acid backbones and linkages. Other analog nucleic acids include those with positive backbones; non-ionic backbones, and non-ribose backbones, including those described in U.S. Patent Nos. 5,235,033 and 5,034,506, and Chapters 6 and 7, ASC Symposium Series 580, *Carbohydrate Modifications in Antisense Research*, Sanghui & 15 Cook, eds.. Nucleic acids containing one or more carbocyclic sugars are also included within one definition of nucleic acids. Modifications of the ribose-phosphate backbone may be done for a variety of reasons, e.g. to increase the stability and half-life of such molecules in physiological environments or as probes on a biochip. Mixtures of naturally occurring nucleic acids and analogs can be made; alternatively, mixtures of different nucleic acid 20 analogs, and mixtures of naturally occurring nucleic acids and analogs may be made.

- A variety of references disclose such nucleic acid analogs, including, for example, phosphoramidate (Beaucage et al., Tetrahedron 49(10):1925 (1993) and references therein; Letsinger, J. Org. Chem. 35:3800 (1970); Sprinzl et al., Eur. J. Biochem. 81:579 (1977); Letsinger et al., Nucl. Acids Res. 14:3487 (1986); Sawai et al, Chem. Lett. 805 (1984), Letsinger et al., J. Am. Chem. Soc. 110:4470 (1988); and Pauwels et al., Chemica 25 Scripta 26:141 91986)), phosphorothioate (Mag et al., Nucleic Acids Res. 19:1437 (1991); and U.S. Patent No. 5,644,048), phosphorodithioate (Briu et al., J. Am. Chem. Soc. 111:2321 (1989), O-methylphosphoroamidite linkages (see Eckstein, Oligonucleotides and Analogues: A Practical Approach, Oxford University Press), and peptide nucleic acid backbones and 30 linkages (see Egholm, J. Am. Chem. Soc. 114:1895 (1992); Meier et al., Chem. Int. Ed. Engl. 31:1008 (1992); Nielsen, Nature, 365:566 (1993); Carlsson et al., Nature 380:207 (1996), all



of which are incorporated by reference). Other analog nucleic acids include those with positive backbones (Denpcy et al., Proc. Natl. Acad. Sci. USA 92:6097 (1995); non-ionic backbones (U.S. Patent Nos. 5,386,023, 5,637,684, 5,602,240, 5,216,141 and 4,469,863; Kiedrowski et al., Angew. Chem. Intl. Ed. English 30:423 (1991); Letsinger et al., J. Am. Chem. Soc. 110:4470 (1988); Letsinger et al., Nucleoside & Nucleotide 13:1597 (1994); Chapters 2 and 3, ASC Symposium Series 580, "Carbohydrate Modifications in Antisense Research", Ed. Y.S. Sanghui and P. Dan Cook; Mesmaeker et al., Bioorganic & Medicinal Chem. Lett. 4:395 (1994); Jeffs et al., J. Biomolecular NMR 34:17 (1994); Tetrahedron Lett. 37:743 (1996)) and non-ribose backbones, including those described in U.S. Patent Nos. 5,235,033 and 5,034,506, and Chapters 6 and 7, ASC Symposium Series 580, "Carbohydrate Modifications in Antisense Research", Ed. Y.S. Sanghui and P. Dan Cook. Nucleic acids containing one or more carbocyclic sugars are also included within one definition of nucleic acids (see Jenkins et al., Chem. Soc. Rev. (1995) pp 169-176). Several nucleic acid analogs are described in Rawls, C & E News June 2, 1997 page 35. All of these references are hereby expressly incorporated by reference.

Particularly preferred are peptide nucleic acids (PNA) which includes peptide nucleic acid analogs. These backbones are substantially non-ionic under neutral conditions, in contrast to the highly charged phosphodiester backbone of naturally occurring nucleic acids. This results in two advantages. First, the PNA backbone exhibits improved hybridization kinetics. PNAs have larger changes in the melting temperature ( $T_m$ ) for mismatched versus perfectly matched basepairs. DNA and RNA typically exhibit a 2-4°C drop in  $T_m$  for an internal mismatch. With the non-ionic PNA backbone, the drop is closer to 7-9°C. Similarly, due to their non-ionic nature, hybridization of the bases attached to these backbones is relatively insensitive to salt concentration. In addition, PNAs are not degraded by cellular enzymes, and thus can be more stable.

The nucleic acids may be single stranded or double stranded, as specified, or contain portions of both double stranded or single stranded sequence. As will be appreciated by those in the art, the depiction of a single strand also defines the sequence of the complementary strand; thus the sequences described herein also provide the complement of the sequence. The nucleic acid may be DNA, both genomic and cDNA, RNA or a hybrid, where the nucleic acid may contain combinations of deoxyribo- and ribo-nucleotides, and

combinations of bases, including uracil, adenine, thymine, cytosine, guanine, inosine, xanthine hypoxanthine, isocytosine, isoguanine, etc. "Transcript" typically refers to a naturally occurring RNA, e.g., a pre-mRNA, hnRNA, or mRNA. As used herein, the term "nucleoside" includes nucleotides and nucleoside and nucleotide analogs, and modified  
5 nucleosides such as amino modified nucleosides. In addition, "nucleoside" includes non-naturally occurring analog structures. Thus, e.g. the individual units of a peptide nucleic acid, each containing a base, are referred to herein as a nucleoside.

A "label" or a "detectable moiety" is a composition detectable by spectroscopic, photochemical, biochemical, immunochemical, chemical, or other physical  
10 means. For example, useful labels include fluorescent dyes, electron-dense reagents, enzymes (e.g., as commonly used in an ELISA), biotin, digoxigenin, or haptens and proteins or other entities which can be made detectable, e.g., by incorporating a radiolabel into the peptide or used to detect antibodies specifically reactive with the peptide. The radioisotope may be, for example,  $^3\text{H}$ ,  $^{14}\text{C}$ ,  $^{32}\text{P}$ ,  $^{35}\text{S}$ , or  $^{125}\text{I}$ . In some cases, particularly using antibodies against the  
15 proteins of the invention, the radioisotopes are used as toxic moieties, as described below. The labels may be incorporated into the prostate cancer nucleic acids, proteins and antibodies at any position. Any method known in the art for conjugating the antibody to the label may be employed, including those methods described by Hunter et al., *Nature*, 144:945 (1962); David et al., *Biochemistry*, 13:1014 (1974); Pain et al., *J. Immunol. Meth.*, 40:219 (1981);  
20 and Nygren, *J. Histochem. and Cytochem.*, 30:407 (1982). The lifetime of radiolabeled peptides or radiolabeled antibody compositions may extended by the addition of substances that stabilize the radiolabeled peptide or antibody and protect it from degradation. Any substance or combination of substances that stabilize the radiolabeled peptide or antibody may be used including those substances disclosed in US Patent No. 5,961,955.

An "effector" or "effector moiety" or "effector component" is a molecule that is bound (or linked, or conjugated), either covalently, through a linker or a chemical bond, or noncovalently, through ionic, van der Waals, electrostatic, or hydrogen bonds, to an antibody. The "effector" can be a variety of molecules including, e.g., detection moieties including radioactive compounds, fluorescent compounds, an enzyme or substrate, tags such as epitope  
30 tags, a toxin; activatable moieties, a chemotherapeutic agent; a lipase; an antibiotic; or a radioisotope emitting "hard" e.g., beta radiation.

A "labeled nucleic acid probe or oligonucleotide" is one that is bound, either covalently, through a linker or a chemical bond, or noncovalently, through ionic, van der Waals, electrostatic, or hydrogen bonds to a label such that the presence of the probe may be detected by detecting the presence of the label bound to the probe. Alternatively, method  
5 using high affinity interactions may achieve the same results where one of a pair of binding partners binds to the other, e.g., biotin, streptavidin.

As used herein a "nucleic acid probe or oligonucleotide" is defined as a nucleic acid capable of binding to a target nucleic acid of complementary sequence through one or more types of chemical bonds, usually through complementary base pairing, usually  
10 through hydrogen bond formation. As used herein, a probe may include natural (i.e., A, G, C, or T) or modified bases (7-deazaguanosine, inosine, etc.). In addition, the bases in a probe may be joined by a linkage other than a phosphodiester bond, so long as it does not functionally interfere with hybridization. Thus, e.g., probes may be peptide nucleic acids in which the constituent bases are joined by peptide bonds rather than phosphodiester linkages.  
15 It will be understood by one of skill in the art that probes may bind target sequences lacking complete complementarity with the probe sequence depending upon the stringency of the hybridization conditions. The probes are preferably directly labeled as with isotopes, chromophores, lumiphores, chromogens, or indirectly labeled such as with biotin to which a streptavidin complex may later bind. By assaying for the presence or absence of the probe,  
20 one can detect the presence or absence of the select sequence or subsequence. Diagnosis or prognosis may be based at the genomic level, or at the level of RNA or protein expression.

The term "recombinant" when used with reference, e.g., to a cell, or nucleic acid, protein, or vector, indicates that the cell, nucleic acid, protein or vector, has been modified by the introduction of a heterologous nucleic acid or protein or the alteration of a  
25 native nucleic acid or protein, or that the cell is derived from a cell so modified. Thus, e.g., recombinant cells express genes that are not found within the native (non-recombinant) form of the cell or express native genes that are otherwise abnormally expressed, under expressed or not expressed at all. By the term "recombinant nucleic acid" herein is meant nucleic acid, originally formed *in vitro*, in general, by the manipulation of nucleic acid, e.g., using  
30 polymerases and endonucleases, in a form not normally found in nature. In this manner, operably linkage of different sequences is achieved. Thus an isolated nucleic acid, in a linear

form, or an expression vector formed *in vitro* by ligating DNA molecules that are not normally joined, are both considered recombinant for the purposes of this invention. It is understood that once a recombinant nucleic acid is made and reintroduced into a host cell or organism, it will replicate non-recombinantly, i.e., using the *in vivo* cellular machinery of the host cell rather than *in vitro* manipulations; however, such nucleic acids, once produced recombinantly, although subsequently replicated non-recombinantly, are still considered recombinant for the purposes of the invention. Similarly, a "recombinant protein" is a protein made using recombinant techniques, i.e., through the expression of a recombinant nucleic acid as depicted above.

10           The term "heterologous" when used with reference to portions of a nucleic acid indicates that the nucleic acid comprises two or more subsequences that are not normally found in the same relationship to each other in nature. For instance, the nucleic acid is typically recombinantly produced, having two or more sequences, e.g., from unrelated genes arranged to make a new functional nucleic acid, e.g., a promoter from one source and a coding region from another source. Similarly, a heterologous protein will often refer to two or more subsequences that are not found in the same relationship to each other in nature (e.g., a fusion protein).

          A "promoter" is defined as an array of nucleic acid control sequences that direct transcription of a nucleic acid. As used herein, a promoter includes necessary nucleic acid sequences near the start site of transcription, such as, in the case of a polymerase II type promoter, a TATA element. A promoter also optionally includes distal enhancer or repressor elements, which can be located as much as several thousand base pairs from the start site of transcription. A "constitutive" promoter is a promoter that is active under most environmental and developmental conditions. An "inducible" promoter is a promoter that is active under environmental or developmental regulation. The term "operably linked" refers to a functional linkage between a nucleic acid expression control sequence (such as a promoter, or array of transcription factor binding sites) and a second nucleic acid sequence, wherein the expression control sequence directs transcription of the nucleic acid corresponding to the second sequence.

30           An "expression vector" is a nucleic acid construct, generated recombinantly or synthetically, with a series of specified nucleic acid elements that permit transcription of a

particular nucleic acid in a host cell. The expression vector can be part of a plasmid, virus, or nucleic acid fragment. Typically, the expression vector includes a nucleic acid to be transcribed operably linked to a promoter.

The phrase "selectively (or specifically) hybridizes to" refers to the binding, duplexing, or hybridizing of a molecule only to a particular nucleotide sequence that is determinative of the presence of the nucleotide sequence, in a heterogeneous population of nucleic acids and other biologics (e.g., total cellular or library DNA or RNA). Similarly, the phrase "specifically (or selectively) binds" to an antibody or "specifically (or selectively) immunoreactive with," when referring to a protein or peptide, refers to a binding reaction that is determinative of the presence of the protein, in a heterogeneous population of proteins and other biologics. Thus, under designated immunoassay or nucleic acid hybridization conditions, the specified antibodies or nucleic acid probes bind to a particular protein nucleotide sequences at least two times the background and more typically more than 10 to 100 times background.

Specific binding to an antibody under such conditions requires an antibody that is selected for its specificity for a particular protein. For example, polyclonal antibodies raised to a particular protein, polymorphic variants, alleles, orthologs, and conservatively modified variants, or splice variants, or portions thereof, can be selected to obtain only those polyclonal antibodies that are specifically immunoreactive with the desired prostate cancer protein and not with other proteins. This selection may be achieved by subtracting out antibodies that cross-react with other molecules. A variety of immunoassay formats may be used to select antibodies specifically immunoreactive with a particular protein. For example, solid-phase ELISA immunoassays are routinely used to select antibodies specifically immunoreactive with a protein (*see, e.g., Harlow & Lane, Antibodies, A Laboratory Manual* (1988) for a description of immunoassay formats and conditions that can be used to determine specific immunoreactivity).

The phrase "stringent hybridization conditions" refers to conditions under which a probe will hybridize to its target subsequence, typically in a complex mixture of nucleic acids, but to no other sequences. Stringent conditions are sequence-dependent and will be different in different circumstances. Longer sequences hybridize specifically at higher temperatures. An extensive guide to the hybridization of nucleic acids is found in

Tijssen, *Techniques in Biochemistry and Molecular Biology--Hybridization with Nucleic Probes*, "Overview of principles of hybridization and the strategy of nucleic acid assays" (1993). Generally, stringent conditions are selected to be about 5-10°C lower than the thermal melting point ( $T_m$ ) for the specific sequence at a defined ionic strength pH. The  $T_m$  is the temperature (under defined ionic strength, pH, and nucleic concentration) at which 50% of the probes complementary to the target hybridize to the target sequence at equilibrium (as the target sequences are present in excess, at  $T_m$ , 50% of the probes are occupied at equilibrium). Stringent conditions will be those in which the salt concentration is less than about 1.0 M sodium ion, typically about 0.01 to 1.0 M sodium ion concentration (or other salts) at pH 7.0 to 8.3 and the temperature is at least about 30°C for short probes (e.g., 10 to 50 nucleotides) and at least about 60°C for long probes (e.g., greater than 50 nucleotides). Stringent conditions may also be achieved with the addition of destabilizing agents such as formamide. For selective or specific hybridization, a positive signal is at least two times background; preferably 10 times background hybridization. Exemplary stringent hybridization conditions can be as following: 50% formamide, 5x SSC, and 1% SDS, incubating at 42°C, or, 5x SSC, 1% SDS, incubating at 65°C, with wash in 0.2x SSC, and 0.1% SDS at 65°C. For PCR, a temperature of about 36°C is typical for low stringency amplification, although annealing temperatures may vary between about 32°C and 48°C depending on primer length. For high stringency PCR amplification, a temperature of about 62°C is typical, although high stringency annealing temperatures can range from about 50°C to about 65°C, depending on the primer length and specificity. Typical cycle conditions for both high and low stringency amplifications include a denaturation phase of 90°C - 95°C for 30 sec - 2 min., an annealing phase lasting 30 sec. - 2 min., and an extension phase of about 72°C for 1 - 2 min. Protocols and guidelines for low and high stringency amplification reactions are provided, e.g., in Innis *et al.* (1990) *PCR Protocols, A Guide to Methods and Applications*, Academic Press, Inc. N.Y.).

Nucleic acids that do not hybridize to each other under stringent conditions are still substantially identical if the polypeptides which they encode are substantially identical. This occurs, e.g., when a copy of a nucleic acid is created using the maximum codon degeneracy permitted by the genetic code. In such cases, the nucleic acids typically hybridize

under moderately stringent hybridization conditions. Exemplary “moderately stringent hybridization conditions” include a hybridization in a buffer of 40% formamide, 1 M NaCl, 1% SDS at 37°C, and a wash in 1X SSC at 45°C. A positive hybridization is at least twice background. Those of ordinary skill will readily recognize that alternative hybridization and wash conditions can be utilized to provide conditions of similar stringency. Additional guidelines for determining hybridization parameters are provided in numerous reference, e.g., and Current Protocols in Molecular Biology, ed. Ausubel, *et al.*

The phrase “functional effects” in the context of assays for testing compounds that modulate activity of a prostate cancer protein includes the determination of a parameter that is indirectly or directly under the influence of the prostate cancer protein or nucleic acid, e.g., a functional, physical, or chemical effect, such as the ability to decrease prostate cancer. It includes ligand binding activity; cell growth on soft agar; anchorage dependence; contact inhibition and density limitation of growth; cellular proliferation; cellular transformation; growth factor or serum dependence; tumor specific marker levels; invasiveness into Matrigel; tumor growth and metastasis *in vivo*; mRNA and protein expression in cells undergoing metastasis, and other characteristics of prostate cancer cells. “Functional effects” include *in vitro*, *in vivo*, and *ex vivo* activities.

By “determining the functional effect” is meant assaying for a compound that increases or decreases a parameter that is indirectly or directly under the influence of a prostate cancer protein sequence, e.g., functional, enzymatic, physical and chemical effects. Such functional effects can be measured by any means known to those skilled in the art, e.g., changes in spectroscopic characteristics (e.g., fluorescence, absorbance, refractive index), hydrodynamic (e.g., shape), chromatographic, or solubility properties for the protein, measuring inducible markers or transcriptional activation of the prostate cancer protein; measuring binding activity or binding assays, e.g. binding to antibodies or other ligands, and measuring cellular proliferation. Determination of the functional effect of a compound on prostate cancer can also be performed using prostate cancer assays known to those of skill in the art such as an *in vitro* assays, e.g., cell growth on soft agar; anchorage dependence; contact inhibition and density limitation of growth; cellular proliferation; cellular transformation; growth factor or serum dependence; tumor specific marker levels; invasiveness into Matrigel; tumor growth and metastasis *in vivo*; mRNA and protein

expression in cells undergoing metastasis, and other characteristics of prostate cancer cells. The functional effects can be evaluated by many means known to those skilled in the art, e.g., microscopy for quantitative or qualitative measures of alterations in morphological features, measurement of changes in RNA or protein levels for prostate cancer-associated sequences, measurement of RNA stability, identification of downstream or reporter gene expression (CAT, luciferase,  $\beta$ -gal, GFP and the like), e.g., via chemiluminescence, fluorescence, colorimetric reactions, antibody binding, inducible markers, and ligand binding assays.

“Inhibitors”, “activators”, and “modulators” of prostate cancer polynucleotide and polypeptide sequences are used to refer to activating, inhibitory, or modulating molecules or compounds identified using *in vitro* and *in vivo* assays of prostate cancer polynucleotide and polypeptide sequences. Inhibitors are compounds that, e.g., bind to, partially or totally block activity, decrease, prevent, delay activation, inactivate, desensitize, or down regulate the activity or expression of prostate cancer proteins, e.g., antagonists. Antisense nucleic acids may seem to inhibit expression and subsequent function of the protein. “Activators” are compounds that increase, open, activate, facilitate, enhance activation, sensitize, agonize, or up regulate prostate cancer protein activity. Inhibitors, activators, or modulators also include genetically modified versions of prostate cancer proteins, e.g., versions with altered activity, as well as naturally occurring and synthetic ligands, antagonists, agonists, antibodies, small chemical molecules and the like. Such assays for inhibitors and activators include, e.g., expressing the prostate cancer protein *in vitro*, in cells, or cell membranes, applying putative modulator compounds, and then determining the functional effects on activity, as described above. Activators and inhibitors of prostate cancer can also be identified by incubating prostate cancer cells with the test compound and determining increases or decreases in the expression of 1 or more prostate cancer proteins, e.g., 1, 2, 3, 4, 5, 10, 15, 20, 25, 30, 40, 50 or more prostate cancer proteins, such as prostate cancer proteins encoded by the sequences set out in Tables 1-16.

Samples or assays comprising prostate cancer proteins that are treated with a potential activator, inhibitor, or modulator are compared to control samples without the inhibitor, activator, or modulator to examine the extent of inhibition. Control samples (untreated with inhibitors) are assigned a relative protein activity value of 100%. Inhibition of a polypeptide is achieved when the activity value relative to the control is about 80%,



preferably 50%, more preferably 25-0%. Activation of a prostate cancer polypeptide is achieved when the activity value relative to the control (untreated with activators) is 110%, more preferably 150%, more preferably 200-500% (i.e., two to five fold higher relative to the control), more preferably 1000-3000% higher.

5           The phrase "changes in cell growth" refers to any change in cell growth and proliferation characteristics *in vitro* or *in vivo*, such as formation of foci, anchorage independence, semi-solid or soft agar growth, changes in contact inhibition and density limitation of growth, loss of growth factor or serum requirements, changes in cell morphology, gaining or losing immortalization, gaining or losing tumor specific markers,  
10   ability to form or suppress tumors when injected into suitable animal hosts, and/or immortalization of the cell. *See, e.g., Freshney, Culture of Animal Cells a Manual of Basic Technique* pp. 231-241 (3<sup>rd</sup> ed. 1994).

"Tumor cell" refers to precancerous, cancerous, and normal cells in a tumor.

"Cancer cells," "transformed" cells or "transformation" in tissue culture, refers  
15   to spontaneous or induced phenotypic changes that do not necessarily involve the uptake of new genetic material. Although transformation can arise from infection with a transforming virus and incorporation of new genomic DNA, or uptake of exogenous DNA, it can also arise spontaneously or following exposure to a carcinogen, thereby mutating an endogenous gene. Transformation is associated with phenotypic changes, such as immortalization of cells,  
20   aberrant growth control, nonmorphological changes, and/or malignancy (*see, Freshney, Culture of Animal Cells a Manual of Basic Technique* (3<sup>rd</sup> ed. 1994)).

"Antibody" refers to a polypeptide comprising a framework region from an immunoglobulin gene or fragments thereof that specifically binds and recognizes an antigen. The recognized immunoglobulin genes include the kappa, lambda, alpha, gamma, delta,  
25   epsilon, and mu constant region genes, as well as the myriad immunoglobulin variable region genes. Light chains are classified as either kappa or lambda. Heavy chains are classified as gamma, mu, alpha, delta, or epsilon, which in turn define the immunoglobulin classes, IgG, IgM, IgA, IgD and IgE, respectively. Typically, the antigen-binding region of an antibody or its functional equivalent will be most critical in specificity and affinity of binding. *See Paul,*  
30   *Fundamental Immunology.*

An exemplary immunoglobulin (antibody) structural unit comprises a tetramer. Each tetramer is composed of two identical pairs of polypeptide chains, each pair having one "light" (about 25 kD) and one "heavy" chain (about 50-70 kD). The N-terminus of each chain defines a variable region of about 100 to 110 or more amino acids primarily responsible for antigen recognition. The terms variable light chain ( $V_L$ ) and variable heavy chain ( $V_H$ ) refer to these light and heavy chains respectively.

Antibodies exist, e.g., as intact immunoglobulins or as a number of well-characterized fragments produced by digestion with various peptidases. Thus, e.g., pepsin digests an antibody below the disulfide linkages in the hinge region to produce  $F(ab)'_2$ , a dimer of Fab which itself is a light chain joined to  $V_H$ - $CH1$  by a disulfide bond. The  $F(ab)'_2$  may be reduced under mild conditions to break the disulfide linkage in the hinge region, thereby converting the  $F(ab)'_2$  dimer into an Fab' monomer. The Fab' monomer is essentially Fab with part of the hinge region (see *Fundamental Immunology* (Paul ed., 3d ed. 1993)). While various antibody fragments are defined in terms of the digestion of an intact antibody, one of skill will appreciate that such fragments may be synthesized *de novo* either chemically or by using recombinant DNA methodology. Thus, the term antibody, as used herein, also includes antibody fragments either produced by the modification of whole antibodies, or those synthesized *de novo* using recombinant DNA methodologies (e.g., single chain Fv) or those identified using phage display libraries (see, e.g., McCafferty *et al.*, *Nature* 348:552-554 (1990)).

For preparation of antibodies, e.g., recombinant, monoclonal, or polyclonal antibodies, many technique known in the art can be used (see, e.g., Kohler & Milstein, *Nature* 256:495-497 (1975); Kozbor *et al.*, *Immunology Today* 4:72 (1983); Cole *et al.*, pp. 77-96 in *Monoclonal Antibodies and Cancer Therapy* (1985); Coligan, *Current Protocols in Immunology* (1991); Harlow & Lane, *Antibodies, A Laboratory Manual* (1988); and Goding, *Monoclonal Antibodies: Principles and Practice* (2d ed. 1986)). Techniques for the production of single chain antibodies (U.S. Patent 4,946,778) can be adapted to produce antibodies to polypeptides of this invention. Also, transgenic mice, or other organisms such as other mammals, may be used to express humanized antibodies. Alternatively, phage display technology can be used to identify antibodies and heteromeric Fab fragments that

specifically bind to selected antigens (*see, e.g., McCafferty et al., Nature* 348:552-554 (1990); Marks *et al., Biotechnology* 10:779-783 (1992)).

A "chimeric antibody" is an antibody molecule in which (a) the constant region, or a portion thereof, is altered, replaced or exchanged so that the antigen binding site (variable region) is linked to a constant region of a different or altered class, effector function and/or species, or an entirely different molecule which confers new properties to the chimeric antibody, *e.g.,* an enzyme, toxin, hormone, growth factor, drug, etc.; or (b) the variable region, or a portion thereof, is altered, replaced or exchanged with a variable region having a different or altered antigen specificity.

#### Identification of prostate cancer-associated sequences

In one aspect, the expression levels of genes are determined in different patient samples for which diagnosis information is desired, to provide expression profiles. An expression profile of a particular sample is essentially a "fingerprint" of the state of the sample; while two states may have any particular gene similarly expressed, the evaluation of a number of genes simultaneously allows the generation of a gene expression profile that is characteristic of the state of the cell. That is, normal tissue (*e.g.,* normal prostate or other tissue) may be distinguished from cancerous or metastatic cancerous tissue of the prostate, or prostate cancer tissue or metastatic prostate cancerous tissue can be compared with tissue samples of prostate and other tissues from surviving cancer patients. By comparing expression profiles of tissue in known different prostate cancer states, information regarding which genes are important (including both up- and down-regulation of genes) in each of these states is obtained.

The identification of sequences that are differentially expressed in prostate cancer versus non-prostate cancer tissue allows the use of this information in a number of ways. For example, a particular treatment regime may be evaluated: does a chemotherapeutic drug act to down-regulate prostate cancer, and thus tumor growth or recurrence, in a particular patient. Similarly, diagnosis and treatment outcomes may be done or confirmed by comparing patient samples with the known expression profiles. Metastatic tissue can also be analyzed to determine the stage of prostate cancer in the tissue. Furthermore, these gene expression profiles (or individual genes) allow screening of drug candidates with an eye to

mimicking or altering a particular expression profile; e.g., screening can be done for drugs that suppress the prostate cancer expression profile. This may be done by making biochips comprising sets of the important prostate cancer genes, which can then be used in these screens. These methods can also be done on the protein basis; that is, protein expression levels of the prostate cancer proteins can be evaluated for diagnostic purposes or to screen candidate agents. In addition, the prostate cancer nucleic acid sequences can be administered for gene therapy purposes, including the administration of antisense nucleic acids, or the prostate cancer proteins (including antibodies and other modulators thereof) administered as therapeutic drugs.

10           Thus the present invention provides nucleic acid and protein sequences that are differentially expressed in prostate cancer, herein termed "prostate cancer sequences." As outlined below, prostate cancer sequences include those that are up-regulated (i.e., expressed at a higher level) in prostate cancer, as well as those that are down-regulated (i.e., expressed at a lower level). In a preferred embodiment, the prostate cancer sequences are from humans; however, as will be appreciated by those in the art, prostate cancer sequences from other organisms may be useful in animal models of disease and drug evaluation; thus, other prostate cancer sequences are provided, from vertebrates, including mammals, including rodents (rats, mice, hamsters, guinea pigs, etc.), primates, farm animals (including sheep, goats, pigs, cows, horses, etc.) and pets, e.g., (dogs, cats, etc.). Prostate cancer sequences from other organisms may be obtained using the techniques outlined below.

15           Prostate cancer sequences can include both nucleic acid and amino acid sequences. As will be appreciated by those in the art and is more fully outlined below, prostate cancer nucleic acid sequences are useful in a variety of applications, including diagnostic applications, which will detect naturally occurring nucleic acids, as well as screening applications; e.g., biochips comprising nucleic acid probes or PCR microtiter plates with selected probes to the prostate cancer sequences can be generated.

25           A prostate cancer sequence can be initially identified by substantial nucleic acid and/or amino acid sequence homology to the prostate cancer sequences outlined herein. Such homology can be based upon the overall nucleic acid or amino acid sequence, and is generally determined as outlined below, using either homology programs or hybridization conditions.

30

For identifying prostate cancer-associated sequences, the prostate cancer screen typically includes comparing genes identified in different tissues, e.g., normal and cancerous tissues, or tumor tissue samples from patients who have metastatic disease vs. non metastatic tissue. Other suitable tissue comparisons include comparing prostate cancer samples with metastatic cancer samples from other cancers, such as lung, breast, gastrointestinal cancers, ovarian, etc. Samples of different stages of prostate cancer, e.g., survivor tissue, drug resistant states, and tissue undergoing metastasis, are applied to biochips comprising nucleic acid probes. The samples are first microdissected, if applicable, and treated as is known in the art for the preparation of mRNA. Suitable biochips are commercially available, e.g. from Affymetrix. Gene expression profiles as described herein are generated and the data analyzed.

In one embodiment, the genes showing changes in expression as between normal and disease states are compared to genes expressed in other normal tissues, preferably normal prostate, but also including, and not limited to lung, heart, brain, liver, breast, kidney, muscle, colon, small intestine, large intestine, spleen, bone and placenta. In a preferred embodiment, those genes identified during the prostate cancer screen that are expressed in any significant amount in other tissues are removed from the profile, although in some embodiments, this is not necessary. That is, when screening for drugs, it is usually preferable that the target be disease specific, to minimize possible side effects.

In a preferred embodiment, prostate cancer sequences are those that are up-regulated in prostate cancer; that is, the expression of these genes is higher in the prostate cancer tissue as compared to non-cancerous tissue. "Up-regulation" as used herein often means at least about a two-fold change, preferably at least about a three fold change, with at least about five-fold or higher being preferred. All unigene cluster identification numbers and accession numbers herein are for the GenBank sequence database and the sequences of the accession numbers are hereby expressly incorporated by reference. GenBank is known in the art, *see, e.g.*, Benson, DA, *et al.*, Nucleic Acids Research 26:1-7 (1998) and <http://www.ncbi.nlm.nih.gov/>. Sequences are also available in other databases, e.g., European Molecular Biology Laboratory (EMBL) and DNA Database of Japan (DDBJ).

In another preferred embodiment, prostate cancer sequences are those that are down-regulated in prostate cancer; that is, the expression of these genes is lower in prostate

cancer tissue as compared to non-cancerous tissue (*see, e.g.*, Tables 8, 12 and 14). "Down-regulation" as used herein often means at least about a 1.5-fold change more preferably a two-fold change, preferably at least about a three fold change, with at least about five-fold or higher being most preferred.

5

### Informatics

The ability to identify genes that are over or under expressed in prostate cancer can additionally provide high-resolution, high-sensitivity datasets which can be used in the areas of diagnostics, therapeutics, drug development, pharmacogenetics, protein structure, biosensor development, and other related areas. For example, the expression profiles can be used in diagnostic or prognostic evaluation of patients with prostate cancer. Or as another example, subcellular toxicological information can be generated to better direct drug structure and activity correlation (*see Anderson, Pharmaceutical Proteomics: Targets, Mechanism, and Function*, paper presented at the IBC Proteomics conference, Coronado, CA (June 11-12, 1998)). Subcellular toxicological information can also be utilized in a biological sensor device to predict the likely toxicological effect of chemical exposures and likely tolerable exposure thresholds (*see U.S. Patent No. 5,811,231*). Similar advantages accrue from datasets relevant to other biomolecules and bioactive agents (e.g., nucleic acids, saccharides, lipids, drugs, and the like).

Thus, in another embodiment, the present invention provides a database that includes at least one set of assay data. The data contained in the database is acquired, e.g., using array analysis either singly or in a library format. The database can be in substantially any form in which data can be maintained and transmitted, but is preferably an electronic database. The electronic database of the invention can be maintained on any electronic device allowing for the storage of and access to the database, such as a personal computer, but is preferably distributed on a wide area network, such as the World Wide Web.

The focus of the present section on databases that include peptide sequence data is for clarity of illustration only. It will be apparent to those of skill in the art that similar databases can be assembled for any assay data acquired using an assay of the invention.

The compositions and methods for identifying and/or quantitating the relative and/or absolute abundance of a variety of molecular and macromolecular species from a biological sample undergoing prostate cancer, i.e., the identification of prostate cancer-associated sequences described herein, provide an abundance of information, which can be correlated with pathological conditions, predisposition to disease, drug testing, therapeutic monitoring, gene-disease causal linkages, identification of correlates of immunity and physiological status, among others. Although the data generated from the assays of the invention is suited for manual review and analysis, in a preferred embodiment, prior data processing using high-speed computers is utilized.

An array of methods for indexing and retrieving biomolecular information is known in the art. For example, U.S. Patents 6,023,659 and 5,966,712 disclose a relational database system for storing biomolecular sequence information in a manner that allows sequences to be catalogued and searched according to one or more protein function hierarchies. U.S. Patent 5,953,727 discloses a relational database having sequence records containing information in a format that allows a collection of partial-length DNA sequences to be catalogued and searched according to association with one or more sequencing projects for obtaining full-length sequences from the collection of partial length sequences. U.S. Patent 5,706,498 discloses a gene database retrieval system for making a retrieval of a gene sequence similar to a sequence data item in a gene database based on the degree of similarity between a key sequence and a target sequence. U.S. Patent 5,538,897 discloses a method using mass spectroscopy fragmentation patterns of peptides to identify amino acid sequences in computer databases by comparison of predicted mass spectra with experimentally-derived mass spectra using a closeness-of-fit measure. U.S. Patent 5,926,818 discloses a multi-dimensional database comprising a functionality for multi-dimensional data analysis described as on-line analytical processing (OLAP), which entails the consolidation of projected and actual data according to more than one consolidation path or dimension. U.S. Patent 5,295,261 reports a hybrid database structure in which the fields of each database record are divided into two classes, navigational and informational data, with navigational fields stored in a hierarchical topological map which can be viewed as a tree structure or as the merger of two or more such tree structures.

See also Mount *et al.*, *Bioinformatics* (2001); *Biological Sequence Analysis: Probabilistic Models of Proteins and Nucleic Acids* (Durbin *et al.*, eds., 1999); *Bioinformatics: A Practical Guide to the Analysis of Genes and Proteins* (Baxeavanis & Oeullette eds., 1998)); Rashidi & Buehler, *Bioinformatics: Basic Applications in Biological Science and Medicine* (1999); *Introduction to Computational Molecular Biology* (Setubal *et al.*, eds 1997); *Bioinformatics: Methods and Protocols* (Misener & Krawetz, eds, 2000); *Bioinformatics: Sequence, Structure, and Databanks: A Practical Approach* (Higgins & Taylor, eds., 2000); Brown, *Bioinformatics: A Biologist's Guide to Biocomputing and the Internet* (2001); Han & Kamber, *Data Mining: Concepts and Techniques* (2000); and  
10 Waterman, *Introduction to Computational Biology: Maps, Sequences, and Genomes* (1995).

The present invention provides a computer database comprising a computer and software for storing in computer-retrievable form assay data records cross-tabulated, e.g., with data specifying the source of the target-containing sample from which each sequence specificity record was obtained.

15 In an exemplary embodiment, at least one of the sources of target-containing sample is from a control tissue sample known to be free of pathological disorders. In a variation, at least one of the sources is a known pathological tissue specimen, e.g., a neoplastic lesion or another tissue specimen to be analyzed for prostate cancer. In another variation, the assay records cross-tabulate one or more of the following parameters for each  
20 target species in a sample: (1) a unique identification code, which can include, e.g., a target molecular structure and/or characteristic separation coordinate (e.g., electrophoretic coordinates); (2) sample source; and (3) absolute and/or relative quantity of the target species present in the sample.

The invention also provides for the storage and retrieval of a collection of  
25 target data in a computer data storage apparatus, which can include magnetic disks, optical disks, magneto-optical disks, DRAM, SRAM, SGRAM, SDRAM, RDRAM, DDR RAM, magnetic bubble memory devices, and other data storage devices, including CPU registers and on-CPU data storage arrays. Typically, the target data records are stored as a bit pattern in an array of magnetic domains on a magnetizable medium or as an array of charge states or  
30 transistor gate states, such as an array of cells in a DRAM device (e.g., each cell comprised of a transistor and a charge storage area, which may be on the transistor). In one embodiment,



the invention provides such storage devices, and computer systems built therewith, comprising a bit pattern encoding a protein expression fingerprint record comprising unique identifiers for at least 10 target data records cross-tabulated with target source.

When the target is a peptide or nucleic acid, the invention preferably provides  
5 a method for identifying related peptide or nucleic acid sequences, comprising performing a computerized comparison between a peptide or nucleic acid sequence assay record stored in or retrieved from a computer storage device or database and at least one other sequence. The comparison can include a sequence analysis or comparison algorithm or computer program embodiment thereof (e.g., FASTA, TFASTA, GAP, BESTFIT) and/or the comparison may  
10 be of the relative amount of a peptide or nucleic acid sequence in a pool of sequences determined from a polypeptide or nucleic acid sample of a specimen.

The invention also preferably provides a magnetic disk, such as an IBM-compatible (DOS, Windows, Windows95/98/2000, Windows NT, OS/2) or other format (e.g., Linux, SunOS, Solaris, AIX, SCO Unix, VMS, MV, Macintosh, etc.) floppy diskette or  
15 hard (fixed, Winchester) disk drive, comprising a bit pattern encoding data from an assay of the invention in a file format suitable for retrieval and processing in a computerized sequence analysis, comparison, or relative quantitation method.

The invention also provides a network, comprising a plurality of computing devices linked via a data link, such as an Ethernet cable (coax or 10BaseT), telephone line,  
20 ISDN line, wireless network, optical fiber, or other suitable signal transmission medium, whereby at least one network device (e.g., computer, disk array, etc.) comprises a pattern of magnetic domains (e.g., magnetic disk) and/or charge domains (e.g., an array of DRAM cells) composing a bit pattern encoding data acquired from an assay of the invention.

The invention also provides a method for transmitting assay data that includes  
25 generating an electronic signal on an electronic communications device, such as a modem, ISDN terminal adapter, DSL, cable modem, ATM switch, or the like, wherein the signal includes (in native or encrypted format) a bit pattern encoding data from an assay or a database comprising a plurality of assay results obtained by the method of the invention.

In a preferred embodiment, the invention provides a computer system for  
30 comparing a query target to a database containing an array of data structures, such as an assay result obtained by the method of the invention, and ranking database targets based on the

degree of identity and gap weight to the target data. A central processor is preferably initialized to load and execute the computer program for alignment and/or comparison of the assay results. Data for a query target is entered into the central processor via an I/O device. Execution of the computer program results in the central processor retrieving the assay data  
5 from the data file, which comprises a binary description of an assay result.

The target data or record and the computer program can be transferred to secondary memory, which is typically random access memory (e.g., DRAM, SRAM, SGRAM, or SDRAM). Targets are ranked according to the degree of correspondence between a selected assay characteristic (e.g., binding to a selected affinity moiety) and the  
10 same characteristic of the query target and results are output via an I/O device. For example, a central processor can be a conventional computer (e.g., Intel Pentium, PowerPC, Alpha, PA-8000, SPARC, MIPS 4400, MIPS 10000, VAX, etc.); a program can be a commercial or public domain molecular biology software package (e.g., UWGCG Sequence Analysis Software, Darwin); a data file can be an optical or magnetic disk, a data server, a memory  
15 device (e.g., DRAM, SRAM, SGRAM, SDRAM, EPROM, bubble memory, flash memory, etc.); an I/O device can be a terminal comprising a video display and a keyboard, a modem, an ISDN terminal adapter, an Ethernet port, a punched card reader, a magnetic strip reader, or other suitable I/O device.

The invention also preferably provides the use of a computer system, such as  
20 that described above, which comprises: (1) a computer; (2) a stored bit pattern encoding a collection of peptide sequence specificity records obtained by the methods of the invention, which may be stored in the computer; (3) a comparison target, such as a query target; and (4) a program for alignment and comparison, typically with rank-ordering of comparison results on the basis of computed similarity values.

25

### **Characteristics of prostate cancer-associated proteins**

Prostate cancer proteins of the present invention may be classified as secreted proteins, transmembrane proteins or intracellular proteins. In one embodiment, the prostate cancer protein is an intracellular protein. Intracellular proteins may be found in the  
30 cytoplasm and/or in the nucleus. Intracellular proteins are involved in all aspects of cellular function and replication (including, e.g., signaling pathways); aberrant expression of such

proteins often results in unregulated or dysregulated cellular processes (*see, e.g., Molecular Biology of the Cell* (Alberts, ed., 3rd ed., 1994)). For example, many intracellular proteins have enzymatic activity such as protein kinase activity, protein phosphatase activity, protease activity, nucleotide cyclase activity, polymerase activity and the like. Intracellular proteins  
5 also serve as docking proteins that are involved in organizing complexes of proteins, or targeting proteins to various subcellular localizations, and are involved in maintaining the structural integrity of organelles.

An increasingly appreciated concept in characterizing proteins is the presence in the proteins of one or more motifs for which defined functions have been attributed. In  
10 addition to the highly conserved sequences found in the enzymatic domain of proteins, highly conserved sequences have been identified in proteins that are involved in protein-protein interaction. For example, Src-homology-2 (SH2) domains bind tyrosine-phosphorylated targets in a sequence dependent manner. PTB domains, which are distinct from SH2 domains, also bind tyrosine phosphorylated targets. SH3 domains bind to proline-rich  
15 targets. In addition, PH domains, tetratricopeptide repeats and WD domains to name only a few, have been shown to mediate protein-protein interactions. Some of these may also be involved in binding to phospholipids or other second messengers. As will be appreciated by one of ordinary skill in the art, these motifs can be identified on the basis of primary sequence; thus, an analysis of the sequence of proteins may provide insight into both the  
20 enzymatic potential of the molecule and/or molecules with which the protein may associate. One useful database is Pfam (protein families), which is a large collection of multiple sequence alignments and hidden Markov models covering many common protein domains. Versions are available via the internet from Washington University in St. Louis, the Sanger Center in England, and the Karolinska Institute in Sweden (*see, e.g., Bateman et al., Nuc. Acids Res.* 28:263-266 (2000); Sonnhammer *et al., Proteins* 28:405-420 (1997); Bateman *et al., Nuc. Acids Res.* 27:260-262 (1999); and Sonnhammer *et al., Nuc. Acids Res.* 26:320-322- (1998)).

In another embodiment, the prostate cancer sequences are transmembrane proteins. Transmembrane proteins are molecules that span a phospholipid bilayer of a cell.  
30 They may have an intracellular domain, an extracellular domain, or both. The intracellular domains of such proteins may have a number of functions including those already described

for intracellular proteins. For example, the intracellular domain may have enzymatic activity and/or may serve as a binding site for additional proteins. Frequently the intracellular domain of transmembrane proteins serves both roles. For example certain receptor tyrosine kinases have both protein kinase activity and SH2 domains. In addition, autophosphorylation  
5 of tyrosines on the receptor molecule itself, creates binding sites for additional SH2 domain containing proteins.

Transmembrane proteins may contain from one to many transmembrane domains. For example, receptor tyrosine kinases, certain cytokine receptors, receptor guanylyl cyclases and receptor serine/threonine protein kinases contain a single  
10 transmembrane domain. However, various other proteins including channels and adenylyl cyclases contain numerous transmembrane domains. Many important cell surface receptors such as G protein coupled receptors (GPCRs) are classified as "seven transmembrane domain" proteins, as they contain 7 membrane spanning regions. Characteristics of transmembrane domains include approximately 20 consecutive hydrophobic amino acids that  
15 may be followed by charged amino acids. Therefore, upon analysis of the amino acid sequence of a particular protein, the localization and number of transmembrane domains within the protein may be predicted (*see, e.g.* PSORT web site <http://psort.nibb.ac.jp/>). Important transmembrane protein receptors include, but are not limited to the insulin receptor, insulin-like growth factor receptor, human growth hormone receptor, glucose  
20 transporters, transferrin receptor, epidermal growth factor receptor, low density lipoprotein receptor, epidermal growth factor receptor, leptin receptor, interleukin receptors, e.g. IL-1 receptor, IL-2 receptor,

The extracellular domains of transmembrane proteins are diverse; however, conserved motifs are found repeatedly among various extracellular domains. Conserved  
25 structure and/or functions have been ascribed to different extracellular motifs. Many extracellular domains are involved in binding to other molecules. In one aspect, extracellular domains are found on receptors. Factors that bind the receptor domain include circulating ligands, which may be peptides, proteins, or small molecules such as adenosine and the like. For example, growth factors such as EGF, FGF and PDGF are circulating growth factors that  
30 bind to their cognate receptors to initiate a variety of cellular responses. Other factors include cytokines, mitogenic factors, neurotrophic factors and the like. Extracellular domains also

bind to cell-associated molecules. In this respect, they mediate cell-cell interactions. Cell-associated ligands can be tethered to the cell, e.g., via a glycosylphosphatidylinositol (GPI) anchor, or may themselves be transmembrane proteins. Extracellular domains also associate with the extracellular matrix and contribute to the maintenance of the cell structure.

5 Prostate cancer proteins that are transmembrane are particularly preferred in the present invention as they are readily accessible targets for immunotherapeutics, as are described herein. In addition, as outlined below, transmembrane proteins can be also useful in imaging modalities. Antibodies may be used to label such readily accessible proteins *in situ*. Alternatively, antibodies can also label intracellular proteins, in which case samples are  
10 typically permeabilized to provide access to intracellular proteins.

It will also be appreciated by those in the art that a transmembrane protein can be made soluble by removing transmembrane sequences, e.g., through recombinant methods. Furthermore, transmembrane proteins that have been made soluble can be made to be secreted through recombinant means by adding an appropriate signal sequence.

15 In another embodiment, the prostate cancer proteins are secreted proteins; the secretion of which can be either constitutive or regulated. These proteins have a signal peptide or signal sequence that targets the molecule to the secretory pathway. Secreted proteins are involved in numerous physiological events; by virtue of their circulating nature, they serve to transmit signals to various other cell types. The secreted protein may function in  
20 an autocrine manner (acting on the cell that secreted the factor), a paracrine manner (acting on cells in close proximity to the cell that secreted the factor) or an endocrine manner (acting on cells at a distance). Thus secreted molecules find use in modulating or altering numerous aspects of physiology. Prostate cancer proteins that are secreted proteins are particularly preferred in the present invention as they serve as good targets for diagnostic markers, e.g.,  
25 for blood, plasma, serum, or stool tests.

#### Use of prostate cancer nucleic acids

As described above, prostate cancer sequence is initially identified by substantial nucleic acid and/or amino acid sequence homology or linkage to the prostate  
30 cancer sequences outlined herein. Such homology can be based upon the overall nucleic acid or amino acid sequence, and is generally determined as outlined below, using either

homology programs or hybridization conditions. Typically, linked sequences on a mRNA are found on the same molecule.

The prostate cancer nucleic acid sequences of the invention, e.g., the sequences in Tables 1-16, can be fragments of larger genes, i.e., they are nucleic acid segments. "Genes" in this context includes coding regions, non-coding regions, and mixtures of coding and non-coding regions. Accordingly, as will be appreciated by those in the art, using the sequences provided herein, extended sequences, in either direction, of the prostate cancer genes can be obtained, using techniques well known in the art for cloning either longer sequences or the full length sequences; see Ausubel, *et al.*, *supra*. Much can be done by informatics and many sequences can be clustered to include multiple sequences corresponding to a single gene, e.g., systems such as UniGene (see, <http://www.ncbi.nlm.nih.gov/UniGene/>).

Once the prostate cancer nucleic acid is identified, it can be cloned and, if necessary, its constituent parts recombined to form the entire prostate cancer nucleic acid coding regions or the entire mRNA sequence. Once isolated from its natural source, e.g., contained within a plasmid or other vector or excised therefrom as a linear nucleic acid segment, the recombinant prostate cancer nucleic acid can be further-used as a probe to identify and isolate other prostate cancer nucleic acids, e.g., extended coding regions. It can also be used as a "precursor" nucleic acid to make modified or variant prostate cancer nucleic acids and proteins.

The prostate cancer nucleic acids of the present invention are used in several ways. In a first embodiment, nucleic acid probes to the prostate cancer nucleic acids are made and attached to biochips to be used in screening and diagnostic methods, as outlined below, or for administration, e.g., for gene therapy, vaccine, and/or antisense applications. Alternatively, the prostate cancer nucleic acids that include coding regions of prostate cancer proteins can be put into expression vectors for the expression of prostate cancer proteins, again for screening purposes or for administration to a patient.

In a preferred embodiment, nucleic acid probes to prostate cancer nucleic acids (both the nucleic acid sequences outlined in the figures and/or the complements thereof) are made. The nucleic acid probes attached to the biochip are designed to be substantially complementary to the prostate cancer nucleic acids, i.e. the target sequence (either the target

sequence of the sample or to other probe sequences, e.g., in sandwich assays), such that hybridization of the target sequence and the probes of the present invention occurs. As outlined below, this complementarity need not be perfect; there may be any number of base pair mismatches which will interfere with hybridization between the target sequence and the single stranded nucleic acids of the present invention. However, if the number of mutations is so great that no hybridization can occur under even the least stringent of hybridization conditions, the sequence is not a complementary target sequence. Thus, by "substantially complementary" herein is meant that the probes are sufficiently complementary to the target sequences to hybridize under normal reaction conditions, particularly high stringency conditions, as outlined herein.

A nucleic acid probe is generally single stranded but can be partially single and partially double stranded. The strandedness of the probe is dictated by the structure, composition, and properties of the target sequence. In general, the nucleic acid probes range from about 8 to about 100 bases long, with from about 10 to about 80 bases being preferred, and from about 30 to about 50 bases being particularly preferred. That is, generally whole genes are not used. In some embodiments, much longer nucleic acids can be used, up to hundreds of bases.

In a preferred embodiment, more than one probe per sequence is used, with either overlapping probes or probes to different sections of the target being used. That is, two, three, four or more probes, with three being preferred, are used to build in a redundancy for a particular target. The probes can be overlapping (i.e., have some sequence in common), or separate. In some cases, PCR primers may be used to amplify signal for higher sensitivity.

As will be appreciated by those in the art, nucleic acids can be attached or immobilized to a solid support in a wide variety of ways. By "immobilized" and grammatical equivalents herein is meant the association or binding between the nucleic acid probe and the solid support is sufficient to be stable under the conditions of binding, washing, analysis, and removal as outlined below. The binding can typically be covalent or non-covalent. By "non-covalent binding" and grammatical equivalents herein is meant one or more of electrostatic, hydrophilic, and hydrophobic interactions. Included in non-covalent binding is the covalent attachment of a molecule, such as, streptavidin to the support and the non-covalent binding of the biotinylated probe to the streptavidin. By "covalent binding" and grammatical

equivalents herein is meant that the two moieties, the solid support and the probe, are attached by at least one bond, including sigma bonds, pi bonds and coordination bonds. Covalent bonds can be formed directly between the probe and the solid support or can be formed by a cross linker or by inclusion of a specific reactive group on either the solid support or the probe or both molecules. Immobilization may also involve a combination of covalent and non-covalent interactions.

In general, the probes are attached to the biochip in a wide variety of ways, as will be appreciated by those in the art. As described herein, the nucleic acids can either be synthesized first, with subsequent attachment to the biochip, or can be directly synthesized on the biochip.

The biochip comprises a suitable solid substrate. By "substrate" or "solid support" or other grammatical equivalents herein is meant a material that can be modified to contain discrete individual sites appropriate for the attachment or association of the nucleic acid probes and is amenable to at least one detection method. As will be appreciated by those in the art, the number of possible substrates are very large, and include, but are not limited to, glass and modified or functionalized glass, plastics (including acrylics, polystyrene and copolymers of styrene and other materials, polypropylene, polyethylene, polybutylene, polyurethanes, Teflon, etc.), polysaccharides, nylon or nitrocellulose, resins, silica or silica-based materials including silicon and modified silicon, carbon, metals, inorganic glasses, plastics, etc. In general, the substrates allow optical detection and do not appreciably fluoresce. A preferred substrate is described in copending application entitled Reusable Low Fluorescent Plastic Biochip, U.S. Application Serial No. 09/270,214, filed March 15, 1999, herein incorporated by reference in its entirety.

Generally the substrate is planar, although as will be appreciated by those in the art, other configurations of substrates may be used as well. For example, the probes may be placed on the inside surface of a tube, for flow-through sample analysis to minimize sample volume. Similarly, the substrate may be flexible, such as a flexible foam, including closed cell foams made of particular plastics.

In a preferred embodiment, the surface of the biochip and the probe may be derivatized with chemical functional groups for subsequent attachment of the two. Thus, e.g., the biochip is derivatized with a chemical functional group including, but not limited to,



amino groups, carboxy groups, oxo groups and thiol groups, with amino groups being particularly preferred. Using these functional groups, the probes can be attached using functional groups on the probes. For example, nucleic acids containing amino groups can be attached to surfaces comprising amino groups, e.g. using linkers as are known in the art; e.g.,  
5 homo-or hetero-bifunctional linkers as are well known (*see* 1994 Pierce Chemical Company catalog, technical section on cross-linkers, pages 155-200). In addition, in some cases, additional linkers, such as alkyl groups (including substituted and heteroalkyl groups) may be used.

In this embodiment, oligonucleotides are synthesized as is known in the art,  
10 and then attached to the surface of the solid support. As will be appreciated by those skilled in the art, either the 5' or 3' terminus may be attached to the solid support, or attachment may be via an internal nucleoside.

In another embodiment, the immobilization to the solid support may be very strong, yet non-covalent. For example, biotinylated oligonucleotides can be made, which  
15 bind to surfaces covalently coated with streptavidin, resulting in attachment.

Alternatively, the oligonucleotides may be synthesized on the surface, as is known in the art. For example, photoactivation techniques utilizing photopolymerization compounds and techniques are used. In a preferred embodiment, the nucleic acids can be synthesized in situ, using well known photolithographic techniques, such as those described  
20 in WO 95/25116; WO 95/35505; U.S. Patent Nos. 5,700,637 and 5,445,934; and references cited within, all of which are expressly incorporated by reference; these methods of attachment form the basis of the Affimetrix GeneChip™ technology.

Often, amplification-based assays are performed to measure the expression level of prostate cancer-associated sequences. These assays are typically performed in  
25 conjunction with reverse transcription. In such assays, a prostate cancer-associated nucleic acid sequence acts as a template in an amplification reaction (e.g., Polymerase Chain Reaction, or PCR). In a quantitative amplification, the amount of amplification product will be proportional to the amount of template in the original sample. Comparison to appropriate controls provides a measure of the amount of prostate cancer-associated RNA. Methods of  
30 quantitative amplification are well known to those of skill in the art. Detailed protocols for

quantitative PCR are provided, e.g., in Innis *et al.*, *PCR Protocols, A Guide to Methods and Applications* (1990).

In some embodiments, a TaqMan based assay is used to measure expression. TaqMan based assays use a fluorogenic oligonucleotide probe that contains a 5' fluorescent dye and a 3' quenching agent. The probe hybridizes to a PCR product, but cannot itself be extended due to a blocking agent at the 3' end. When the PCR product is amplified in subsequent cycles, the 5' nuclease activity of the polymerase, e.g., AmpliTaq, results in the cleavage of the TaqMan probe. This cleavage separates the 5' fluorescent dye and the 3' quenching agent, thereby resulting in an increase in fluorescence as a function of amplification (see, e.g., literature provided by Perkin-Elmer, e.g., [www2.perkin-elmer.com](http://www2.perkin-elmer.com)).

Other suitable amplification methods include, but are not limited to, ligase chain reaction (LCR) (see Wu & Wallace, *Genomics* 4:560 (1989), Landegren *et al.*, *Science* 241:1077 (1988), and Barringer *et al.*, *Gene* 89:117 (1990)), transcription amplification (Kwoh *et al.*, *Proc. Natl. Acad. Sci. USA* 86:1173 (1989)), self-sustained sequence replication (Guatelli *et al.*, *Proc. Nat. Acad. Sci. USA* 87:1874 (1990)), dot PCR, and linker adapter PCR, etc.

### **Expression of prostate cancer proteins from nucleic acids**

In a preferred embodiment, prostate cancer nucleic acids, e.g., encoding prostate cancer proteins are used to make a variety of expression vectors to express prostate cancer proteins which can then be used in screening assays, as described below. Expression vectors and recombinant DNA technology are well known to those of skill in the art (see, e.g., Ausubel, *supra*, and *Gene Expression Systems* (Fernandez & Hoeffler, eds, 1999)) and are used to express proteins. The expression vectors may be either self-replicating extrachromosomal vectors or vectors which integrate into a host genome. Generally, these expression vectors include transcriptional and translational regulatory nucleic acid operably linked to the nucleic acid encoding the prostate cancer protein. The term "control sequences" refers to DNA sequences used for the expression of an operably linked coding sequence in a particular host organism. Control sequences that are suitable for prokaryotes, e.g., include a promoter, optionally an operator sequence, and a ribosome binding site. Eukaryotic cells are known to utilize promoters, polyadenylation signals, and enhancers.

Nucleic acid is "operably linked" when it is placed into a functional relationship with another nucleic acid sequence. For example, DNA for a presequence or secretory leader is operably linked to DNA for a polypeptide if it is expressed as a preprotein that participates in the secretion of the polypeptide; a promoter or enhancer is operably linked  
5 to a coding sequence if it affects the transcription of the sequence; or a ribosome binding site is operably linked to a coding sequence if it is positioned so as to facilitate translation. Generally, "operably linked" means that the DNA sequences being linked are contiguous, and, in the case of a secretory leader, contiguous and in reading phase. However, enhancers do not have to be contiguous. Linking is typically accomplished by ligation at convenient  
10 restriction sites. If such sites do not exist, synthetic oligonucleotide adaptors or linkers are used in accordance with conventional practice. Transcriptional and translational regulatory nucleic acid will generally be appropriate to the host cell used to express the prostate cancer protein. Numerous types of appropriate expression vectors, and suitable regulatory sequences are known in the art for a variety of host cells.

15 In general, transcriptional and translational regulatory sequences may include, but are not limited to, promoter sequences, ribosomal binding sites, transcriptional start and stop sequences, translational start and stop sequences, and enhancer or activator sequences. In a preferred embodiment, the regulatory sequences include a promoter and transcriptional start and stop sequences.

20 Promoter sequences encode either constitutive or inducible promoters. The promoters may be either naturally occurring promoters or hybrid promoters. Hybrid promoters, which combine elements of more than one promoter, are also known in the art, and are useful in the present invention.

In addition, an expression vector may comprise additional elements. For  
25 example, the expression vector may have two replication systems, thus allowing it to be maintained in two organisms, e.g. in mammalian or insect cells for expression and in a procaryotic host for cloning and amplification. Furthermore, for integrating expression vectors, the expression vector contains at least one sequence homologous to the host cell genome, and preferably two homologous sequences which flank the expression construct.  
30 The integrating vector may be directed to a specific locus in the host cell by selecting the

appropriate homologous sequence for inclusion in the vector. Constructs for integrating vectors are well known in the art (e.g., Fernandez & Hoeffler, *supra*).

In addition, in a preferred embodiment, the expression vector contains a selectable marker gene to allow the selection of transformed host cells. Selection genes are well known in the art and will vary with the host cell used.

The prostate cancer proteins of the present invention are produced by culturing a host cell transformed with an expression vector containing nucleic acid encoding a prostate cancer protein, under the appropriate conditions to induce or cause expression of the prostate cancer protein. Conditions appropriate for prostate cancer protein expression will vary with the choice of the expression vector and the host cell, and will be easily ascertained by one skilled in the art through routine experimentation or optimization. For example, the use of constitutive promoters in the expression vector will require optimizing the growth and proliferation of the host cell, while the use of an inducible promoter requires the appropriate growth conditions for induction. In addition, in some embodiments, the timing of the harvest is important. For example, the baculoviral systems used in insect cell expression are lytic viruses, and thus harvest time selection can be crucial for product yield.

Appropriate host cells include yeast, bacteria, archaeobacteria, fungi, and insect and animal cells, including mammalian cells. Of particular interest are *Saccharomyces cerevisiae* and other yeasts, *E. coli*, *Bacillus subtilis*, Sf9 cells, C129 cells, 293 cells, *Neurospora*, BHK, CHO, COS, HeLa cells, HUVEC (human umbilical vein endothelial cells), THP1 cells (a macrophage cell line) and various other human cells and cell lines.

In a preferred embodiment, the prostate cancer proteins are expressed in mammalian cells. Mammalian expression systems are also known in the art, and include retroviral and adenoviral systems. One expression vector system is a retroviral vector system such as is generally described in PCT/US97/01019 and PCT/US97/01048, both of which are hereby expressly incorporated by reference. Of particular use as mammalian promoters are the promoters from mammalian viral genes, since the viral genes are often highly expressed and have a broad host range. Examples include the SV40 early promoter, mouse mammary tumor virus LTR promoter, adenovirus major late promoter, herpes simplex virus promoter, and the CMV promoter (*see, e.g.,* Fernandez & Hoeffler, *supra*). Typically, transcription termination and polyadenylation sequences recognized by mammalian cells are regulatory

regions located 3' to the translation stop codon and thus, together with the promoter elements, flank the coding sequence. Examples of transcription terminator and polyadenylation signals include those derived from SV40.

5 The methods of introducing exogenous nucleic acid into mammalian hosts, as well as other hosts, is well known in the art, and will vary with the host cell used. Techniques include dextran-mediated transfection, calcium phosphate precipitation, polybrene mediated transfection, protoplast fusion, electroporation, viral infection, encapsulation of the polynucleotide(s) in liposomes, and direct microinjection of the DNA into nuclei.

10 In a preferred embodiment, prostate cancer proteins are expressed in bacterial systems. Bacterial expression systems are well known in the art. Promoters from bacteriophage may also be used and are known in the art. In addition, synthetic promoters and hybrid promoters are also useful; e.g., the tac promoter is a hybrid of the trp and lac promoter sequences. Furthermore, a bacterial promoter can include naturally occurring  
15 promoters of non-bacterial origin that have the ability to bind bacterial RNA polymerase and initiate transcription. In addition to a functioning promoter sequence, an efficient ribosome binding site is desirable. The expression vector may also include a signal peptide sequence that provides for secretion of the prostate cancer protein in bacteria. The protein is either secreted into the growth media (gram-positive bacteria) or into the periplasmic space, located  
20 between the inner and outer membrane of the cell (gram-negative bacteria). The bacterial expression vector may also include a selectable marker gene to allow for the selection of bacterial strains that have been transformed. Suitable selection genes include genes which render the bacteria resistant to drugs such as ampicillin, chloramphenicol, erythromycin, kanamycin, neomycin and tetracycline. Selectable markers also include biosynthetic genes,  
25 such as those in the histidine, tryptophan and leucine biosynthetic pathways. These components are assembled into expression vectors. Expression vectors for bacteria are well known in the art, and include vectors for *Bacillus subtilis*, *E. coli*, *Streptococcus cremoris*, and *Streptococcus lividans*, among others (e.g., Fernandez & Hoeffler, *supra*). The bacterial expression vectors are transformed into bacterial host cells using techniques well known in  
30 the art, such as calcium chloride treatment, electroporation, and others.

In one embodiment, prostate cancer proteins are produced in insect cells: Expression vectors for the transformation of insect cells, and in particular, baculovirus-based expression vectors, are well known in the art.

In a preferred embodiment, prostate cancer protein is produced in yeast cells.

- 5 Yeast expression systems are well known in the art, and include expression vectors for *Saccharomyces cerevisiae*, *Candida albicans* and *C. maltosa*, *Hansenula polymorpha*, *Kluyveromyces fragilis* and *K. lactis*, *Pichia guilliermondii* and *P. pastoris*, *Schizosaccharomyces pombe*, and *Yarrowia lipolytica*.

- The prostate cancer protein may also be made as a fusion protein, using techniques well known in the art. Thus, e.g., for the creation of monoclonal antibodies, if the desired epitope is small, the prostate cancer protein may be fused to a carrier protein to form an immunogen. Alternatively, the prostate cancer protein may be made as a fusion protein to increase expression, or for other reasons. For example, when the prostate cancer protein is a prostate cancer peptide, the nucleic acid encoding the peptide may be linked to other nucleic acid for expression purposes.
- 10
- 15

- In a preferred embodiment, the prostate cancer protein is purified or isolated after expression. Prostate cancer proteins may be isolated or purified in a variety of ways known to those skilled in the art depending on what other components are present in the sample. Standard purification methods include electrophoretic, molecular, immunological and chromatographic techniques, including ion exchange, hydrophobic, affinity, and reverse-phase HPLC chromatography, and chromatofocusing. For example, the prostate cancer protein may be purified using a standard anti-prostate cancer protein antibody column. Ultrafiltration and diafiltration techniques, in conjunction with protein concentration, are also useful. For general guidance in suitable purification techniques, see Scopes, *Protein Purification* (1982). The degree of purification necessary will vary depending on the use of the prostate cancer protein. In some instances no purification will be necessary.
- 20
- 25

Once expressed and purified if necessary, the prostate cancer proteins and nucleic acids are useful in a number of applications. They may be used as immunoselection reagents, as vaccine reagents, as screening agents, etc.

### Variants of prostate cancer proteins

In one embodiment, the prostate cancer proteins are derivative or variant prostate cancer proteins as compared to the wild-type sequence. That is, as outlined more fully below, the derivative prostate cancer peptide will often contain at least one amino acid substitution, deletion or insertion, with amino acid substitutions being particularly preferred. The amino acid substitution, insertion or deletion may occur at any residue within the prostate cancer peptide.

Also included within one embodiment of prostate cancer proteins of the present invention are amino acid sequence variants. These variants typically fall into one or more of three classes: substitutional, insertional or deletional variants. These variants ordinarily are prepared by site specific mutagenesis of nucleotides in the DNA encoding the prostate cancer protein, using cassette or PCR mutagenesis or other techniques well known in the art, to produce DNA encoding the variant, and thereafter expressing the DNA in recombinant cell culture as outlined above. However, variant prostate cancer protein fragments having up to about 100-150 residues may be prepared by in vitro synthesis using established techniques. Amino acid sequence variants are characterized by the predetermined nature of the variation, a feature that sets them apart from naturally occurring allelic or interspecies variation of the prostate cancer protein amino acid sequence. The variants typically exhibit the same qualitative biological activity as the naturally occurring analogue, although variants can also be selected which have modified characteristics as will be more fully outlined below.

While the site or region for introducing an amino acid sequence variation is predetermined, the mutation per se need not be predetermined. For example, in order to optimize the performance of a mutation at a given site, random mutagenesis may be conducted at the target codon or region and the expressed prostate cancer variants screened for the optimal combination of desired activity. Techniques for making substitution mutations at predetermined sites in DNA having a known sequence are well known, e.g., M13 primer mutagenesis and PCR mutagenesis. Screening of the mutants is done using assays of prostate cancer protein activities.

Amino acid substitutions are typically of single residues; insertions usually will be on the order of from about 1 to 20 amino acids, although considerably larger

insertions may be tolerated. Deletions range from about 1 to about 20 residues, although in some cases deletions may be much larger.

Substitutions, deletions, insertions or any combination thereof may be used to arrive at a final derivative. Generally these changes are done on a few amino acids to  
5 minimize the alteration of the molecule. However, larger changes may be tolerated in certain circumstances. When small alterations in the characteristics of the prostate cancer protein are desired, substitutions are generally made in accordance with the amino acid substitution relationships provided in the definition section.

The variants typically exhibit the same qualitative biological activity and will  
10 elicit the same immune response as the naturally-occurring analog, although variants also are selected to modify the characteristics of the prostate cancer proteins as needed. Alternatively, the variant may be designed such that the biological activity of the prostate cancer protein is altered. For example, glycosylation sites may be altered or removed.

Substantial changes in function or immunological identity are made by  
15 selecting substitutions that are less conservative than those described above. For example, substitutions may be made which more significantly affect: the structure of the polypeptide backbone in the area of the alteration, for example the alpha-helical or beta-sheet structure; the charge or hydrophobicity of the molecule at the target site; or the bulk of the side chain. The substitutions which in general are expected to produce the greatest changes in the  
20 polypeptide's properties are those in which (a) a hydrophilic residue, e.g. seryl or threonyl is substituted for (or by) a hydrophobic residue, e.g. leucyl, isoleucyl, phenylalanyl, valyl or alanyl; (b) a cysteine or proline is substituted for (or by) any other residue; (c) a residue having an electropositive side chain, e.g. lysyl, arginyl, or histidyl, is substituted for (or by) an electronegative residue, e.g. glutamyl or aspartyl; or (d) a residue having a bulky side  
25 chain, e.g. phenylalanine, is substituted for (or by) one not having a side chain, e.g. glycine.

Covalent modifications of prostate cancer polypeptides are included within the scope of this invention. One type of covalent modification includes reacting targeted amino acid residues of a prostate cancer polypeptide with an organic derivatizing agent that is  
30 capable of reacting with selected side chains or the N-or C-terminal residues of a prostate cancer polypeptide. Derivatization with bifunctional agents is useful, for instance, for crosslinking prostate cancer polypeptides to a water-insoluble support matrix or surface for



use in the method for purifying anti-prostate cancer polypeptide antibodies or screening assays, as is more fully described below. Commonly used crosslinking agents include, e.g., 1,1-bis(diazoacetyl)-2-phenylethane, glutaraldehyde, N-hydroxysuccinimide esters, e.g., esters with 4-azidosalicylic acid, homobifunctional imidoesters, including disuccinimidyl  
5 esters such as 3,3'-dithiobis(succinimidylpropionate), bifunctional maleimides such as bis-N-maleimido-1,8-octane and agents such as methyl-3-((p-azidophenyl)dithio)propioimide.

Other modifications include deamidation of glutamyl and asparagyl residues to the corresponding glutamyl and aspartyl residues, respectively, hydroxylation of proline and lysine, phosphorylation of hydroxyl groups of seryl, threonyl or tyrosyl residues,  
10 methylation of the amino groups of the lysine, arginine, and histidine side chains (Creighton, *Proteins: Structure and Molecular Properties*, pp. 79-86 (1983)), acetylation of the N-terminal amine, and amidation of any C-terminal carboxyl group.

Another type of covalent modification of the prostate cancer polypeptide included within the scope of this invention comprises altering the native glycosylation pattern  
15 of the polypeptide. "Altering the native glycosylation pattern" is intended for purposes herein to mean deleting one or more carbohydrate moieties found in native sequence prostate cancer polypeptide, and/or adding one or more glycosylation sites that are not present in the native sequence prostate cancer polypeptide. Glycosylation patterns can be altered in many ways. For example the use of different cell types to express prostate cancer-associated  
20 sequences can result in different glycosylation patterns.

Addition of glycosylation sites to prostate cancer polypeptides may also be accomplished by altering the amino acid sequence thereof. The alteration may be made, e.g., by the addition of, or substitution by, one or more serine or threonine residues to the native sequence prostate cancer polypeptide (for O-linked glycosylation sites). The prostate cancer  
25 amino acid sequence may optionally be altered through changes at the DNA level, particularly by mutating the DNA encoding the prostate cancer polypeptide at preselected bases such that codons are generated that will translate into the desired amino acids.

Another means of increasing the number of carbohydrate moieties on the prostate cancer polypeptide is by chemical or enzymatic coupling of glycosides to the  
30 polypeptide. Such methods are described in the art, e.g., in WO 87/05330, and in Aplin & Wriston, *CRC Crit. Rev. Biochem.*, pp. 259-306 (1981).

Removal of carbohydrate moieties present on the prostate cancer polypeptide may be accomplished chemically or enzymatically or by mutational substitution of codons encoding for amino acid residues that serve as targets for glycosylation. Chemical deglycosylation techniques are known in the art and described, for instance, by Hakimuddin,  
5 *et al.*, *Arch. Biochem. Biophys.*, 259:52 (1987) and by Edge *et al.*, *Anal. Biochem.*, 118:131 (1981). Enzymatic cleavage of carbohydrate moieties on polypeptides can be achieved by the use of a variety of endo- and exo-glycosidases as described by Thotakura *et al.*, *Meth. Enzymol.*, 138:350 (1987).

Another type of covalent modification of prostate cancer comprises linking the  
10 prostate cancer polypeptide to one of a variety of nonproteinaceous polymers, e.g., polyethylene glycol, polypropylene glycol, or polyoxyalkylenes, in the manner set forth in U.S. Patent Nos. 4,640,835; 4,496,689; 4,301,144; 4,670,417; 4,791,192 or 4,179,337.

Prostate cancer polypeptides of the present invention may also be modified in a way to form chimeric molecules comprising a prostate cancer polypeptide fused to another,  
15 heterologous polypeptide or amino acid sequence. In one embodiment, such a chimeric molecule comprises a fusion of a prostate cancer polypeptide with a tag polypeptide which provides an epitope to which an anti-tag antibody can selectively bind. The epitope tag is generally placed at the amino- or carboxyl-terminus of the prostate cancer polypeptide. The presence of such epitope-tagged forms of a prostate cancer polypeptide can be detected using  
20 an antibody against the tag polypeptide. Also, provision of the epitope tag enables the prostate cancer polypeptide to be readily purified by affinity purification using an anti-tag antibody or another type of affinity matrix that binds to the epitope tag. In an alternative embodiment, the chimeric molecule may comprise a fusion of a prostate cancer polypeptide with an immunoglobulin or a particular region of an immunoglobulin. For a bivalent form of  
25 the chimeric molecule, such a fusion could be to the Fc region of an IgG molecule.

Various tag polypeptides and their respective antibodies are well known in the art. Examples include poly-histidine (poly-his) or poly-histidine-glycine (poly-his-gly) tags; HIS6 and metal chelation tags, the flu HA tag polypeptide and its antibody 12CA5 (Field *et al.*, *Mol. Cell. Biol.* 8:2159-2165 (1988)); the c-myc tag and the 8F9, 3C7, 6E10, G4, B7 and  
30 9E10 antibodies thereto (Evan *et al.*, *Molecular and Cellular Biology* 5:3610-3616 (1985)); and the Herpes Simplex virus glycoprotein D (gD) tag and its antibody (Paborsky *et al.*,

*Protein Engineering* 3(6):547-553 (1990)). Other tag polypeptides include the Flag-peptide (Hopp *et al.*, *BioTechnology* 6:1204-1210 (1988)); the KT3 epitope peptide (Martin *et al.*, *Science* 255:192-194 (1992)); tubulin epitope peptide (Skinner *et al.*, *J. Biol. Chem.* 266:15163-15166 (1991)); and the T7 gene 10 protein peptide tag (Lutz-Freyermuth *et al.*,  
5 *Proc. Natl. Acad. Sci. USA* 87:6393-6397 (1990)).

Also included are other prostate cancer proteins of the prostate cancer family, and prostate cancer proteins from other organisms, which are cloned and expressed as outlined below. Thus, probe or degenerate polymerase chain reaction (PCR) primer sequences may be used to find other related prostate cancer proteins from humans or other  
10 organisms. As will be appreciated by those in the art, particularly useful probe and/or PCR primer sequences include the unique areas of the prostate cancer nucleic acid sequence. As is generally known in the art, preferred PCR primers are from about 15 to about 35 nucleotides in length, with from about 20 to about 30 being preferred, and may contain inosine as needed. The conditions for the PCR reaction are well known in the art (e.g., Innis, *PCR Protocols*,  
15 *supra*).

#### **Antibodies to prostate cancer proteins**

In a preferred embodiment, when the prostate cancer protein is to be used to generate antibodies, e.g., for immunotherapy or immunodiagnosis, the prostate cancer protein  
20 should share at least one epitope or determinant with the full length protein. By "epitope" or "determinant" herein is typically meant a portion of a protein which will generate and/or bind an antibody or T-cell receptor in the context of MHC. Thus, in most instances, antibodies made to a smaller prostate cancer protein will be able to bind to the full-length protein, particularly linear epitopes. In a preferred embodiment, the epitope is unique; that is,  
25 antibodies generated to a unique epitope show little or no cross-reactivity.

Methods of preparing polyclonal antibodies are known to the skilled artisan (e.g., Coligan, *supra*; and Harlow & Lane, *supra*). Polyclonal antibodies can be raised in a mammal, e.g., by one or more injections of an immunizing agent and, if desired, an adjuvant. Typically, the immunizing agent and/or adjuvant will be injected in the mammal by multiple  
30 subcutaneous or intraperitoneal injections. The immunizing agent may include a protein encoded by a nucleic acid of the figures or fragment thereof or a fusion protein thereof. It

may be useful to conjugate the immunizing agent to a protein known to be immunogenic in the mammal being immunized. Examples of such immunogenic proteins include but are not limited to keyhole limpet hemocyanin, serum albumin, bovine thyroglobulin, and soybean trypsin inhibitor. Examples of adjuvants which may be employed include Freund's complete  
5 adjuvant and MPL-TDM adjuvant (monophosphoryl Lipid A, synthetic trehalose dicorynomycolate). The immunization protocol may be selected by one skilled in the art without undue experimentation.

The antibodies may, alternatively, be monoclonal antibodies. Monoclonal antibodies may be prepared using hybridoma methods, such as those described by Kohler &  
10 Milstein, *Nature* 256:495 (1975). In a hybridoma method, a mouse, hamster, or other appropriate host animal, is typically immunized with an immunizing agent to elicit lymphocytes that produce or are capable of producing antibodies that will specifically bind to the immunizing agent. Alternatively, the lymphocytes may be immunized in vitro. The immunizing agent will typically include a polypeptide encoded by a nucleic acid of Tables 1-  
15 16 fragment thereof, or a fusion protein thereof. Generally, either peripheral blood lymphocytes ("PBLs") are used if cells of human origin are desired, or spleen cells or lymph node cells are used if non-human mammalian sources are desired. The lymphocytes are then fused with an immortalized cell line using a suitable fusing agent, such as polyethylene glycol, to form a hybridoma cell (Goding, *Monoclonal Antibodies: Principles and Practice*,  
20 pp. 59-103 (1986)). Immortalized cell lines are usually transformed mammalian cells, particularly myeloma cells of rodent, bovine and human origin. Usually, rat or mouse myeloma cell lines are employed. The hybridoma cells may be cultured in a suitable culture medium that preferably contains one or more substances that inhibit the growth or survival of the unfused, immortalized cells. For example, if the parental cells lack the enzyme  
25 hypoxanthine guanine phosphoribosyl transferase (HGPRT or HPRT), the culture medium for the hybridomas typically will include hypoxanthine, aminopterin, and thymidine ("HAT medium"), which substances prevent the growth of HGPRT-deficient cells.

In one embodiment, the antibodies are bispecific antibodies. Bispecific antibodies are monoclonal, preferably human or humanized, antibodies that have binding  
30 specificities for at least two different antigens or that have binding specificities for two epitopes on the same antigen. In one embodiment, one of the binding specificities is for a

protein encoded by a nucleic acid Tables 1-16 or a fragment thereof, the other one is for any other antigen, and preferably for a cell-surface protein or receptor or receptor subunit, preferably one that is tumor specific. Alternatively, tetramer-type technology may create multivalent reagents.

5           In a preferred embodiment, the antibodies to prostate cancer protein are capable of reducing or eliminating a biological function of a prostate cancer protein, as is described below. That is, the addition of anti-prostate cancer protein antibodies (either polyclonal or preferably monoclonal) to prostate cancer tissue (or cells containing prostate cancer) may reduce or eliminate the prostate cancer. Generally, at least a 25% decrease in  
10 activity, growth, size or the like is preferred, with at least about 50% being particularly preferred and about a 95-100% decrease being especially preferred.

          In a preferred embodiment the antibodies to the prostate cancer proteins are humanized antibodies (e.g., Xenerex Biosciences, Mederex, Inc., Abgenix, Inc., Protein Design Labs, Inc.) Humanized forms of non-human (e.g., murine) antibodies are chimeric  
15 molecules of immunoglobulins, immunoglobulin chains or fragments thereof (such as Fv, Fab, Fab', F(ab')<sub>2</sub> or other antigen-binding subsequences of antibodies) which contain minimal sequence derived from non-human immunoglobulin. Humanized antibodies include human immunoglobulins (recipient antibody) in which residues from a complementary determining region (CDR) of the recipient are replaced by residues from a CDR of a non-  
20 human species (donor antibody) such as mouse, rat or rabbit having the desired specificity, affinity and capacity. In some instances, Fv framework residues of the human immunoglobulin are replaced by corresponding non-human residues. Humanized antibodies may also comprise residues which are found neither in the recipient antibody nor in the imported CDR or framework sequences. In general, a humanized antibody will comprise  
25 substantially all of at least one, and typically two, variable domains, in which all or substantially all of the CDR regions correspond to those of a non-human immunoglobulin and all or substantially all of the framework (FR) regions are those of a human immunoglobulin consensus sequence. The humanized antibody optimally also will comprise at least a portion of an immunoglobulin constant region (Fc), typically that of a human  
30 immunoglobulin (Jones *et al.*, *Nature* 321:522-525 (1986); Riechmann *et al.*, *Nature* 332:323-329 (1988); and Presta, *Curr. Op. Struct. Biol.* 2:593-596 (1992)). Humanization

can be essentially performed following the method of Winter and co-workers (Jones *et al.*, *Nature* 321:522-525 (1986); Riechmann *et al.*, *Nature* 332:323-327 (1988); Verhoeyen *et al.*, *Science* 239:1534-1536 (1988)), by substituting rodent CDRs or CDR sequences for the corresponding sequences of a human antibody. Accordingly, such humanized antibodies are  
5 chimeric antibodies (U.S. Patent No. 4,816,567), wherein substantially less than an intact human variable domain has been substituted by the corresponding sequence from a non-human species.

Human antibodies can also be produced using various techniques known in the art, including phage display libraries (Hoogenboom & Winter, *J. Mol. Biol.* 227:381 (1991);  
10 Marks *et al.*, *J. Mol. Biol.* 222:581 (1991)). The techniques of Cole *et al.* and Boerner *et al.* are also available for the preparation of human monoclonal antibodies (Cole *et al.*, *Monoclonal Antibodies and Cancer Therapy*, p. 77 (1985) and Boerner *et al.*, *J. Immunol.* 147(1):86-95 (1991)). Similarly, human antibodies can be made by introducing of human immunoglobulin loci into transgenic animals, e.g., mice in which the endogenous  
15 immunoglobulin genes have been partially or completely inactivated. Upon challenge, human antibody production is observed, which closely resembles that seen in humans in all respects, including gene rearrangement, assembly, and antibody repertoire. This approach is described, e.g., in U.S. Patent Nos. 5,545,807; 5,545,806; 5,569,825; 5,625,126; 5,633,425; 5,661,016, and in the following scientific publications: Marks *et al.*, *Bio/Technology* 10:779-  
20 783 (1992); Lonberg *et al.*, *Nature* 368:856-859 (1994); Morrison, *Nature* 368:812-13 (1994); Fishwild *et al.*, *Nature Biotechnology* 14:845-51 (1996); Neuberger, *Nature Biotechnology* 14:826 (1996); Lonberg & Huszar, *Intern. Rev. Immunol.* 13:65-93 (1995).

By immunotherapy is meant treatment of prostate cancer with an antibody raised against prostate cancer proteins. As used herein, immunotherapy can be passive or  
25 active. Passive immunotherapy as defined herein is the passive transfer of antibody to a recipient (patient). Active immunization is the induction of antibody and/or T-cell responses in a recipient (patient). Induction of an immune response is the result of providing the recipient with an antigen to which antibodies are raised. As appreciated by one of ordinary skill in the art, the antigen may be provided by injecting a polypeptide against which  
30 antibodies are desired to be raised into a recipient, or contacting the recipient with a nucleic

acid capable of expressing the antigen and under conditions for expression of the antigen, leading to an immune response.

In a preferred embodiment the prostate cancer proteins against which antibodies are raised are secreted proteins as described above. Without being bound by theory, antibodies used for treatment, bind and prevent the secreted protein from binding to its receptor, thereby inactivating the secreted prostate cancer protein.

In another preferred embodiment, the prostate cancer protein to which antibodies are raised is a transmembrane protein. Without being bound by theory, antibodies used for treatment, bind the extracellular domain of the prostate cancer protein and prevent it from binding to other proteins, such as circulating ligands or cell-associated molecules. The antibody may cause down-regulation of the transmembrane prostate cancer protein. As will be appreciated by one of ordinary skill in the art, the antibody may be a competitive, non-competitive or uncompetitive inhibitor of protein binding to the extracellular domain of the prostate cancer protein. The antibody is also an antagonist of the prostate cancer protein. Further, the antibody prevents activation of the transmembrane prostate cancer protein. In one aspect, when the antibody prevents the binding of other molecules to the prostate cancer protein, the antibody prevents growth of the cell. The antibody may also be used to target or sensitize the cell to cytotoxic agents, including, but not limited to TNF- $\alpha$ , TNF- $\beta$ , IL-1, INF- $\gamma$  and IL-2, or chemotherapeutic agents including 5FU, vinblastine, actinomycin D, cisplatin, methotrexate, and the like. In some instances the antibody belongs to a sub-type that activates serum complement when complexed with the transmembrane protein thereby mediating cytotoxicity or antigen-dependent cytotoxicity (ADCC). Thus, prostate cancer is treated by administering to a patient antibodies directed against the transmembrane prostate cancer protein. Antibody-labeling may activate a co-toxin, localize a toxin payload, or otherwise provide means to locally ablate cells.

In another preferred embodiment, the antibody is conjugated to an effector moiety. The effector moiety can be any number of molecules, including labelling moieties such as radioactive labels or fluorescent labels, or can be a therapeutic moiety. In one aspect the therapeutic moiety is a small molecule that modulates the activity of the prostate cancer protein. In another aspect the therapeutic moiety modulates the activity of molecules associated with or in close proximity to the prostate cancer protein. The therapeutic moiety

may inhibit enzymatic activity such as protease or collagenase or protein kinase activity associated with prostate cancer.

In a preferred embodiment, the therapeutic moiety can also be a cytotoxic agent. In this method, targeting the cytotoxic agent to prostate cancer tissue or cells, results in a reduction in the number of afflicted cells, thereby reducing symptoms associated with prostate cancer. Cytotoxic agents are numerous and varied and include, but are not limited to, cytotoxic drugs or toxins or active fragments of such toxins. Suitable toxins and their corresponding fragments include diphtheria A chain, exotoxin A chain, ricin A chain, abrin A chain, curcin, crotin, phenomycin, enomycin and the like. Cytotoxic agents also include radiochemicals made by conjugating radioisotopes to antibodies raised against prostate cancer proteins, or binding of a radionuclide to a chelating agent that has been covalently attached to the antibody. Targeting the therapeutic moiety to transmembrane prostate cancer proteins not only serves to increase the local concentration of therapeutic moiety in the prostate cancer afflicted area, but also serves to reduce deleterious side effects that may be associated with the therapeutic moiety.

In another preferred embodiment, the prostate cancer protein against which the antibodies are raised is an intracellular protein. In this case, the antibody may be conjugated to a protein which facilitates entry into the cell. In one case, the antibody enters the cell by endocytosis. In another embodiment, a nucleic acid encoding the antibody is administered to the individual or cell. Moreover, wherein the prostate cancer protein can be targeted within a cell, i.e., the nucleus, an antibody thereto contains a signal for that target localization, i.e., a nuclear localization signal.

The prostate cancer antibodies of the invention specifically bind to prostate cancer proteins. By "specifically bind" herein is meant that the antibodies bind to the protein with a  $K_d$  of at least about 0.1 mM, more usually at least about 1  $\mu$ M, preferably at least about 0.1  $\mu$ M or better, and most preferably, 0.01  $\mu$ M or better. Selectivity of binding is also important.

#### **Detection of prostate cancer sequence for diagnostic and therapeutic applications**

In one aspect, the RNA expression levels of genes are determined for different cellular states in the prostate cancer phenotype. Expression levels of genes in normal tissue



(i.e., not undergoing prostate cancer) and in prostate cancer tissue (and in some cases, for varying severities of prostate cancer that relate to prognosis, as outlined below) are evaluated to provide expression profiles. An expression profile of a particular cell state or point of development is essentially a "fingerprint" of the state. While two states may have any particular gene similarly expressed, the evaluation of a number of genes simultaneously allows the generation of a gene expression profile that is reflective of the state of the cell. By comparing expression profiles of cells in different states, information regarding which genes are important (including both up- and down-regulation of genes) in each of these states is obtained. Then, diagnosis may be performed or confirmed to determine whether a tissue sample has the gene expression profile of normal or cancerous tissue. This will provide for molecular diagnosis of related conditions.

"Differential expression," or grammatical equivalents as used herein, refers to qualitative or quantitative differences in the temporal and/or cellular gene expression patterns within and among cells and tissue. Thus, a differentially expressed gene can qualitatively have its expression altered, including an activation or inactivation, in, e.g., normal versus prostate cancer tissue. Genes may be turned on or turned off in a particular state, relative to another state thus permitting comparison of two or more states. A qualitatively regulated gene will exhibit an expression pattern within a state or cell type which is detectable by standard techniques. Some genes will be expressed in one state or cell type, but not in both. Alternatively, the difference in expression may be quantitative, e.g., in that expression is increased or decreased; i.e., gene expression is either upregulated, resulting in an increased amount of transcript, or downregulated, resulting in a decreased amount of transcript. The degree to which expression differs need only be large enough to quantify via standard characterization techniques as outlined below, such as by use of Affymetrix GeneChip™ expression arrays, Lockhart, *Nature Biotechnology* 14:1675-1680 (1996), hereby expressly incorporated by reference. Other techniques include, but are not limited to, quantitative reverse transcriptase PCR, northern analysis and RNase protection. As outlined above, preferably the change in expression (i.e., upregulation or downregulation) is at least about 50%, more preferably at least about 100%, more preferably at least about 150%, more preferably at least about 200%, with from 300 to at least 1000% being especially preferred.

Evaluation may be at the gene transcript, or the protein level. The amount of gene expression may be monitored using nucleic acid probes to the DNA or RNA equivalent of the gene transcript, and the quantification of gene expression levels, or, alternatively, the final gene product itself (protein) can be monitored, e.g., with antibodies to the prostate cancer protein and standard immunoassays (ELISAs, etc.) or other techniques, including mass spectroscopy assays, 2D gel electrophoresis assays, etc. Proteins corresponding to prostate cancer genes, i.e., those identified as being important in a prostate cancer phenotype, can be evaluated in a prostate cancer diagnostic test.

In a preferred embodiment, gene expression monitoring is performed simultaneously on a number of genes. Multiple protein expression monitoring can be performed as well. Similarly, these assays may be performed on an individual basis as well.

In this embodiment, the prostate cancer nucleic acid probes are attached to biochips as outlined herein for the detection and quantification of prostate cancer sequences in a particular cell. The assays are further described below in the example. PCR techniques can be used to provide greater sensitivity.

In a preferred embodiment nucleic acids encoding the prostate cancer protein are detected. Although DNA or RNA encoding the prostate cancer protein may be detected, of particular interest are methods wherein an mRNA encoding a prostate cancer protein is detected. Probes to detect mRNA can be a nucleotide/deoxynucleotide probe that is complementary to and hybridizes with the mRNA and includes, but is not limited to, oligonucleotides, cDNA or RNA. Probes also should contain a detectable label, as defined herein. In one method the mRNA is detected after immobilizing the nucleic acid to be examined on a solid support such as nylon membranes and hybridizing the probe with the sample. Following washing to remove the non-specifically bound probe, the label is detected. In another method detection of the mRNA is performed in situ. In this method permeabilized cells or tissue samples are contacted with a detectably labeled nucleic acid probe for sufficient time to allow the probe to hybridize with the target mRNA. Following washing to remove the non-specifically bound probe, the label is detected. For example a digoxigenin labeled riboprobe (RNA probe) that is complementary to the mRNA encoding a prostate cancer protein is detected by binding the digoxigenin with an anti-digoxigenin

secondary antibody and developed with nitro blue tetrazolium and 5-bromo-4-chloro-3-indoyl phosphate.

In a preferred embodiment, various proteins from the three classes of proteins as described herein (secreted, transmembrane or intracellular proteins) are used in diagnostic assays. The prostate cancer proteins, antibodies, nucleic acids, modified proteins and cells containing prostate cancer sequences are used in diagnostic assays. This can be performed on an individual gene or corresponding polypeptide level. In a preferred embodiment, the expression profiles are used, preferably in conjunction with high throughput screening techniques to allow monitoring for expression profile genes and/or corresponding polypeptides.

As described and defined herein, prostate cancer proteins, including intracellular, transmembrane or secreted proteins, find use as markers of prostate cancer. Detection of these proteins in putative prostate cancer tissue allows for detection or diagnosis of prostate cancer. In one embodiment, antibodies are used to detect prostate cancer proteins. A preferred method separates proteins from a sample by electrophoresis on a gel (typically a denaturing and reducing protein gel, but may be another type of gel, including isoelectric focusing gels and the like). Following separation of proteins, the prostate cancer protein is detected, e.g., by immunoblotting with antibodies raised against the prostate cancer protein. Methods of immunoblotting are well known to those of ordinary skill in the art.

In another preferred method, antibodies to the prostate cancer protein find use in *in situ* imaging techniques, e.g., in histology (e.g., *Methods in Cell Biology: Antibodies in Cell Biology*, volume 37 (Asai, ed. 1993)). In this method cells are contacted with from one to many antibodies to the prostate cancer protein(s). Following washing to remove non-specific antibody binding, the presence of the antibody or antibodies is detected. In one embodiment the antibody is detected by incubating with a secondary antibody that contains a detectable label. In another method the primary antibody to the prostate cancer protein(s) contains a detectable label, e.g. an enzyme marker that can act on a substrate. In another preferred embodiment each one of multiple primary antibodies contains a distinct and detectable label. This method finds particular use in simultaneous screening for a plurality of prostate cancer proteins. As will be appreciated by one of ordinary skill in the art, many other histological imaging techniques are also provided by the invention.

In a preferred embodiment the label is detected in a fluorometer which has the ability to detect and distinguish emissions of different wavelengths. In addition, a fluorescence activated cell sorter (FACS) can be used in the method.

In another preferred embodiment, antibodies find use in diagnosing prostate cancer from blood, serum, plasma, stool, and other samples. Such samples, therefore, are useful as samples to be probed or tested for the presence of prostate cancer proteins. Antibodies can be used to detect a prostate cancer protein by previously described immunoassay techniques including ELISA, immunoblotting (western blotting), immunoprecipitation, BIACORE technology and the like. Conversely, the presence of antibodies may indicate an immune response against an endogenous prostate cancer protein.

In a preferred embodiment, *in situ* hybridization of labeled prostate cancer nucleic acid probes to tissue arrays is done. For example, arrays of tissue samples, including prostate cancer tissue and/or normal tissue, are made. *In situ* hybridization (*see, e.g., Ausubel, supra*) is then performed. When comparing the fingerprints between an individual and a standard, the skilled artisan can make a diagnosis, a prognosis, or a prediction based on the findings. It is further understood that the genes which indicate the diagnosis may differ from those which indicate the prognosis and molecular profiling of the condition of the cells may lead to distinctions between responsive or refractory conditions or may be predictive of outcomes.

In a preferred embodiment, the prostate cancer proteins, antibodies, nucleic acids, modified proteins and cells containing prostate cancer sequences are used in prognosis assays. As above, gene expression profiles can be generated that correlate to prostate cancer, in terms of long term prognosis. Again, this may be done on either a protein or gene level, with the use of genes being preferred. As above, prostate cancer probes may be attached to biochips for the detection and quantification of prostate cancer sequences in a tissue or patient. The assays proceed as outlined above for diagnosis. PCR method may provide more sensitive and accurate quantification.

#### Assays for therapeutic compounds

In a preferred embodiment members of the proteins, nucleic acids, and antibodies as described herein are used in drug screening assays. The prostate cancer

proteins, antibodies, nucleic acids, modified proteins and cells containing prostate cancer sequences are used in drug screening assays or by evaluating the effect of drug candidates on a "gene expression profile" or expression profile of polypeptides. In a preferred embodiment, the expression profiles are used, preferably in conjunction with high throughput screening techniques to allow monitoring for expression profile genes after treatment with a candidate agent (e.g., Zlokarnik, *et al.*, *Science* 279:84-8 (1998); Heid, *Genome Res* 6:986-94, 1996).

In a preferred embodiment, the prostate cancer proteins, antibodies, nucleic acids, modified proteins and cells containing the native or modified prostate cancer proteins are used in screening assays. That is, the present invention provides novel methods for screening for compositions which modulate the prostate cancer phenotype or an identified physiological function of a prostate cancer protein. As above, this can be done on an individual gene level or by evaluating the effect of drug candidates on a "gene expression profile". In a preferred embodiment, the expression profiles are used, preferably in conjunction with high throughput screening techniques to allow monitoring for expression profile genes after treatment with a candidate agent, see Zlokarnik, *supra*.

Having identified the differentially expressed genes herein, a variety of assays may be executed. In a preferred embodiment, assays may be run on an individual gene or protein level. That is, having identified a particular gene as up regulated in prostate cancer, test compounds can be screened for the ability to modulate gene expression or for binding to the prostate cancer protein. "Modulation" thus includes both an increase and a decrease in gene expression. The preferred amount of modulation will depend on the original change of the gene expression in normal versus tissue undergoing prostate cancer, with changes of at least 10%, preferably 50%, more preferably 100-300%, and in some embodiments 300-1000% or greater. Thus, if a gene exhibits a 4-fold increase in prostate cancer tissue compared to normal tissue, a decrease of about four-fold is often desired; similarly, a 10-fold decrease in prostate cancer tissue compared to normal tissue often provides a target value of a 10-fold increase in expression to be induced by the test compound.

The amount of gene expression may be monitored using nucleic acid probes and the quantification of gene expression levels, or, alternatively, the gene product itself can be monitored, e.g., through the use of antibodies to the prostate cancer protein and standard

immunoassays. Proteomics and separation techniques may also allow quantification of expression.

In a preferred embodiment, gene expression or protein monitoring of a number of entities, i.e., an expression profile, is monitored simultaneously. Such profiles will typically involve a plurality of those entities described herein..

In this embodiment, the prostate cancer nucleic acid probes are attached to biochips as outlined herein for the detection and quantification of prostate cancer sequences in a particular cell. Alternatively, PCR may be used. Thus, a series, e.g., of microtiter plate, may be used with dispensed primers in desired wells. A PCR reaction can then be performed and analyzed for each well.

Expression monitoring can be performed to identify compounds that modify the expression of one or more prostate cancer-associated sequences, e.g., a polynucleotide sequence set out in Tables 1-16. Generally, in a preferred embodiment, a test modulator is added to the cells prior to analysis. Moreover, screens are also provided to identify agents that modulate prostate cancer, modulate prostate cancer proteins, bind to a prostate cancer protein, or interfere with the binding of a prostate cancer protein and an antibody or other binding partner.

The term "test compound" or "drug candidate" or "modulator" or grammatical equivalents as used herein describes any molecule, e.g., protein, oligopeptide, small organic molecule, polysaccharide, polynucleotide, etc., to be tested for the capacity to directly or indirectly alter the prostate cancer phenotype or the expression of a prostate cancer sequence, e.g., a nucleic acid or protein sequence. In preferred embodiments, modulators alter expression profiles, or expression profile nucleic acids or proteins provided herein. In one embodiment, the modulator suppresses a prostate cancer phenotype, e.g. to a normal tissue fingerprint. In another embodiment, a modulator induced a prostate cancer phenotype. Generally, a plurality of assay mixtures are run in parallel with different agent concentrations to obtain a differential response to the various concentrations. Typically, one of these concentrations serves as a negative control, i.e., at zero concentration or below the level of detection.

Drug candidates encompass numerous chemical classes, though typically they are organic molecules, preferably small organic compounds having a molecular weight of

more than 100 and less than about 2,500 daltons. Preferred small molecules are less than 2000, or less than 1500 or less than 1000 or less than 500 D. Candidate agents comprise functional groups necessary for structural interaction with proteins, particularly hydrogen bonding, and typically include at least an amine, carbonyl, hydroxyl or carboxyl group, preferably at least two of the functional chemical groups. The candidate agents often comprise cyclical carbon or heterocyclic structures and/or aromatic or polyaromatic structures substituted with one or more of the above functional groups. Candidate agents are also found among biomolecules including peptides, saccharides, fatty acids, steroids, purines, pyrimidines, derivatives, structural analogs or combinations thereof. Particularly preferred are peptides.

In one aspect, a modulator will neutralize the effect of a prostate cancer protein. By "neutralize" is meant that activity of a protein is inhibited or blocked and the consequent effect on the cell.

In certain embodiments, combinatorial libraries of potential modulators will be screened for an ability to bind to a prostate cancer polypeptide or to modulate activity. Conventionally, new chemical entities with useful properties are generated by identifying a chemical compound (called a "lead compound") with some desirable property or activity, e.g., inhibiting activity, creating variants of the lead compound, and evaluating the property and activity of those variant compounds. Often, high throughput screening (HTS) methods are employed for such an analysis.

In one preferred embodiment, high throughput screening methods involve providing a library containing a large number of potential therapeutic compounds (candidate compounds). Such "combinatorial chemical libraries" are then screened in one or more assays to identify those library members (particular chemical species or subclasses) that display a desired characteristic activity. The compounds thus identified can serve as conventional "lead compounds" or can themselves be used as potential or actual therapeutics.

A combinatorial chemical library is a collection of diverse chemical compounds generated by either chemical synthesis or biological synthesis by combining a number of chemical "building blocks" such as reagents. For example, a linear combinatorial chemical library, such as a polypeptide (e.g., mutein) library, is formed by combining a set of chemical building blocks called amino acids in every possible way for a given compound

length (i.e., the number of amino acids in a polypeptide compound). Millions of chemical compounds can be synthesized through such combinatorial mixing of chemical building blocks (Gallop *et al.*, *J. Med. Chem.* 37(9):1233-1251 (1994)).

Preparation and screening of combinatorial chemical libraries is well known to those of skill in the art. Such combinatorial chemical libraries include, but are not limited to, peptide libraries (*see, e.g.*, U.S. Patent No. 5,010,175, Furka, *Pept. Prot. Res.* 37:487-493 (1991), Houghton *et al.*, *Nature*, 354:84-88 (1991)), peptoids (PCT Publication No WO 91/19735), encoded peptides (PCT Publication WO 93/20242), random bio-oligomers (PCT Publication WO 92/00091), benzodiazepines (U.S. Pat. No. 5,288,514), diversomers such as hydantoins, benzodiazepines and dipeptides (Hobbs *et al.*, *Proc. Nat. Acad. Sci. USA* 90:6909-6913 (1993)), vinylogous polypeptides (Hagihara *et al.*, *J. Amer. Chem. Soc.* 114:6568 (1992)), nonpeptidal peptidomimetics with a Beta-D-Glucose scaffolding (Hirschmann *et al.*, *J. Amer. Chem. Soc.* 114:9217-9218 (1992)), analogous organic syntheses of small compound libraries (Chen *et al.*, *J. Amer. Chem. Soc.* 116:2661 (1994)), oligocarbamates (Cho, *et al.*, *Science* 261:1303 (1993)), and/or peptidyl phosphonates (Campbell *et al.*, *J. Org. Chem.* 59:658 (1994)). *See, generally*, Gordon *et al.*, *J. Med. Chem.* 37:1385 (1994), nucleic acid libraries (*see, e.g.*, Strategene, Corp.), peptide nucleic acid libraries (*see, e.g.*, U.S. Patent 5,539,083), antibody libraries (*see, e.g.*, Vaughn *et al.*, *Nature Biotechnology* 14(3):309-314 (1996), and PCT/US96/10287), carbohydrate libraries (*see, e.g.*, Liang *et al.*, *Science* 274:1520-1522 (1996), and U.S. Patent No. 5,593,853), and small organic molecule libraries (*see, e.g.*, benzodiazepines, Baum, C&EN, Jan 18, page 33 (1993); isoprenoids, U.S. Patent No. 5,569,588; thiazolidinones and metathiazanones, U.S. Patent No. 5,549,974; pyrrolidines, U.S. Patent Nos. 5,525,735 and 5,519,134; morpholino compounds, U.S. Patent No. 5,506,337; benzodiazepines, U.S. Patent No. 5,288,514; and the like).

Devices for the preparation of combinatorial libraries are commercially available (*see, e.g.*, 357 MPS, 390 MPS, Advanced Chem Tech, Louisville KY, Symphony, Rainin, Woburn, MA, 433A Applied Biosystems, Foster City, CA, 9050 Plus, Millipore, Bedford, MA).

A number of well known robotic systems have also been developed for solution phase chemistries. These systems include automated workstations like the automated synthesis apparatus developed by Takeda Chemical Industries, LTD. (Osaka,



Japan) and many robotic systems utilizing robotic arms (Zymate II, Zymark Corporation, Hopkinton, Mass.; Orca, Hewlett-Packard, Palo Alto, Calif.), which mimic the manual synthetic operations performed by a chemist. Any of the above devices are suitable for use with the present invention. The nature and implementation of modifications to these devices  
5 (if any) so that they can operate as discussed herein will be apparent to persons skilled in the relevant art. In addition, numerous combinatorial libraries are themselves commercially available (*see, e.g.*, ComGenex, Princeton, N.J., Asinex, Moscow, RU, Tripos, Inc., St. Louis, MO, ChemStar, Ltd, Moscow, RU, 3D Pharmaceuticals, Exton, PA, Martek Biosciences, Columbia, MD, *etc.*).

10           The assays to identify modulators are amenable to high throughput screening. Preferred assays thus detect enhancement or inhibition of prostate cancer gene transcription, inhibition or enhancement of polypeptide expression, and inhibition or enhancement of polypeptide activity.

High throughput assays for the presence, absence, quantification, or other  
15 properties of particular nucleic acids or protein products are well known to those of skill in the art. Similarly, binding assays and reporter gene assays are similarly well known. Thus, *e.g.*, U.S. Patent No. 5,559,410 discloses high throughput screening methods for proteins, U.S. Patent No. 5,585,639 discloses high throughput screening methods for nucleic acid binding (*i.e.*, in arrays), while U.S. Patent Nos. 5,576,220 and 5,541,061 disclose high  
20 throughput methods of screening for ligand/antibody binding.

In addition, high throughput screening systems are commercially available (*see, e.g.*, Zymark Corp., Hopkinton, MA; Air Technical Industries, Mentor, OH; Beckman Instruments, Inc. Fullerton, CA; Precision Systems, Inc., Natick, MA, *etc.*). These systems typically automate entire procedures, including all sample and reagent pipetting, liquid  
25 dispensing, timed incubations, and final readings of the microplate in detector(s) appropriate for the assay. These configurable systems provide high throughput and rapid start up as well as a high degree of flexibility and customization. The manufacturers of such systems provide detailed protocols for various high throughput systems. Thus, *e.g.*, Zymark Corp. provides technical bulletins describing screening systems for detecting the modulation of gene  
30 transcription, ligand binding, and the like.

In one embodiment, modulators are proteins, often naturally occurring proteins or fragments of naturally occurring proteins. Thus, *e.g.*, cellular extracts containing proteins, or random or directed digests of proteinaceous cellular extracts, may be used. In this way libraries of proteins may be made for screening in the methods of the invention.

- 5 Particularly preferred in this embodiment are libraries of bacterial, fungal, viral, and mammalian proteins, with the latter being preferred, and human proteins being especially preferred. Particularly useful test compound will be directed to the class of proteins to which the target belongs, *e.g.*, substrates for enzymes or ligands and receptors.

- 10 In a preferred embodiment, modulators are peptides of from about 5 to about 30 amino acids, with from about 5 to about 20 amino acids being preferred, and from about 7 to about 15 being particularly preferred. The peptides may be digests of naturally occurring proteins as is outlined above, random peptides, or "biased" random peptides. By "randomized" or grammatical equivalents herein is meant that each nucleic acid and peptide consists of essentially random nucleotides and amino acids, respectively. Since generally  
15 these random peptides (or nucleic acids, discussed below) are chemically synthesized, they may incorporate any nucleotide or amino acid at any position. The synthetic process can be designed to generate randomized proteins or nucleic acids, to allow the formation of all or most of the possible combinations over the length of the sequence, thus forming a library of randomized candidate bioactive proteinaceous agents.

- 20 In one embodiment, the library is fully randomized, with no sequence preferences or constants at any position. In a preferred embodiment, the library is biased. That is, some positions within the sequence are either held constant, or are selected from a limited number of possibilities. For example, in a preferred embodiment, the nucleotides or amino acid residues are randomized within a defined class, *e.g.*, of hydrophobic amino acids,  
25 hydrophilic residues, sterically biased (either small or large) residues, towards the creation of nucleic acid binding domains, the creation of cysteines, for cross-linking, prolines for SH-3 domains, serines, threonines, tyrosines or histidines for phosphorylation sites, etc., or to purines, etc.

- Modulators of prostate cancer can also be nucleic acids, as defined below. As  
30 described above generally for proteins, nucleic acid modulating agents may be naturally occurring nucleic acids, random nucleic acids, or "biased" random nucleic acids. For

example, digests of procaryotic or eucaryotic genomes may be used as is outlined above for proteins.

In certain embodiments, the activity of a prostate cancer-associated protein is down-regulated, or entirely inhibited, by the use of antisense polynucleotide, *i.e.*, a nucleic acid complementary to, and which can preferably hybridize specifically to, a coding mRNA  
5 acid complementary to, and which can preferably hybridize specifically to, a coding mRNA nucleic acid sequence, *e.g.*, a prostate cancer protein mRNA, or a subsequence thereof. Binding of the antisense polynucleotide to the mRNA reduces the translation and/or stability of the mRNA.

In the context of this invention, antisense polynucleotides can comprise  
10 naturally-occurring nucleotides, or synthetic species formed from naturally-occurring subunits or their close homologs. Antisense polynucleotides may also have altered sugar moieties or inter-sugar linkages. Exemplary among these are the phosphorothioate and other sulfur containing species which are known for use in the art. Analogs are comprehended by this invention so long as they function effectively to hybridize with the prostate cancer  
15 protein mRNA. *See, e.g.*, Isis Pharmaceuticals, Carlsbad, CA; Sequitor, Inc., Natick, MA.

Such antisense polynucleotides can readily be synthesized using recombinant means, or can be synthesized *in vitro*. Equipment for such synthesis is sold by several vendors, including Applied Biosystems. The preparation of other oligonucleotides such as phosphorothioates and alkylated derivatives is also well known to those of skill in the art.

20 Antisense molecules as used herein include antisense or sense oligonucleotides. Sense oligonucleotides can, *e.g.*, be employed to block transcription by binding to the anti-sense strand. The antisense and sense oligonucleotide comprise a single-stranded nucleic acid sequence (either RNA or DNA) capable of binding to target mRNA (sense) or DNA (antisense) sequences for prostate cancer molecules. Antisense or sense  
25 oligonucleotides, according to the present invention, comprise a fragment generally at least about 14 nucleotides, preferably from about 14 to 30 nucleotides. The ability to derive an antisense or a sense oligonucleotide, based upon a cDNA sequence encoding a given protein is described in, *e.g.*, Stein & Cohen (*Cancer Res.* 48:2659 (1988) and van der Krol *et al.* (*BioTechniques* 6:958 (1988)).

30 In addition to antisense polynucleotides, ribozymes can be used to target and inhibit transcription of prostate cancer-associated nucleotide sequences. A ribozyme is an

RNA molecule that catalytically cleaves other RNA molecules. Different kinds of ribozymes have been described, including group I ribozymes, hammerhead ribozymes, hairpin ribozymes, RNase P, and axhead ribozymes (*see, e.g., Castanotto et al., Adv. in Pharmacology* 25: 289-317 (1994) for a general review of the properties of different ribozymes).

The general features of hairpin ribozymes are described, e.g., in Hampel *et al., Nucl. Acids Res.* 18:299-304 (1990); European Patent Publication No. 0 360 257; U.S. Patent No. 5,254,678. Methods of preparing are well known to those of skill in the art (*see, e.g., WO 94/26877; Ojwang et al., Proc. Natl. Acad. Sci. USA* 90:6340-6344 (1993); Yamada *et al., Human Gene Therapy* 1:39-45 (1994); Leavitt *et al., Proc. Natl. Acad. Sci. USA* 92:699-703 (1995); Leavitt *et al., Human Gene Therapy* 5:1151-120 (1994); and Yamada *et al., Virology* 205: 121-126 (1994)).

Polynucleotide modulators of prostate cancer may be introduced into a cell containing the target nucleotide sequence by formation of a conjugate with a ligand binding molecule, as described in WO 91/04753. Suitable ligand binding molecules include, but are not limited to, cell surface receptors, growth factors, other cytokines, or other ligands that bind to cell surface receptors. Preferably, conjugation of the ligand binding molecule does not substantially interfere with the ability of the ligand binding molecule to bind to its corresponding molecule or receptor, or block entry of the sense or antisense oligonucleotide or its conjugated version into the cell. Alternatively, a polynucleotide modulator of prostate cancer may be introduced into a cell containing the target nucleic acid sequence, e.g., by formation of an polynucleotide-lipid complex, as described in WO 90/10448. It is understood that the use of antisense molecules or knock out and knock in models may also be used in screening assays as discussed above, in addition to methods of treatment.

As noted above, gene expression monitoring is conveniently used to test candidate modulators (*e.g., protein, nucleic acid or small molecule*). After the candidate agent has been added and the cells allowed to incubate for some period of time, the sample containing a target sequence to be analyzed is added to the biochip. If required, the target sequence is prepared using known techniques. For example, the sample may be treated to lyse the cells, using known lysis buffers, electroporation, etc., with purification and/or amplification such as PCR performed as appropriate. For example, an *in vitro* transcription

with labels covalently attached to the nucleotides is performed. Generally, the nucleic acids are labeled with biotin-FITC or PE, or with cy3 or cy5.

In a preferred embodiment, the target sequence is labeled with, e.g., a fluorescent, a chemiluminescent, a chemical, or a radioactive signal, to provide a means of detecting the target sequence's specific binding to a probe. The label also can be an enzyme, such as, alkaline phosphatase or horseradish peroxidase, which when provided with an appropriate substrate produces a product that can be detected. Alternatively, the label can be a labeled compound or small molecule, such as an enzyme inhibitor, that binds but is not catalyzed or altered by the enzyme. The label also can be a moiety or compound, such as, an epitope tag or biotin which specifically binds to streptavidin. For the example of biotin, the streptavidin is labeled as described above, thereby, providing a detectable signal for the bound target sequence. Unbound labeled streptavidin is typically removed prior to analysis.

As will be appreciated by those in the art, these assays can be direct hybridization assays or can comprise "sandwich assays", which include the use of multiple probes, as is generally outlined in U.S. Patent Nos. 5,681,702, 5,597,909, 5,545,730, 5,594,117, 5,591,584, 5,571,670, 5,580,731, 5,571,670, 5,591,584, 5,624,802, 5,635,352, 5,594,118, 5,359,100, 5,124,246 and 5,681,697, all of which are hereby incorporated by reference. In this embodiment, in general, the target nucleic acid is prepared as outlined above, and then added to the biochip comprising a plurality of nucleic acid probes, under conditions that allow the formation of a hybridization complex.

A variety of hybridization conditions may be used in the present invention, including high, moderate and low stringency conditions as outlined above. The assays are generally run under stringency conditions which allows formation of the label probe hybridization complex only in the presence of target. Stringency can be controlled by altering a step parameter that is a thermodynamic variable, including, but not limited to, temperature, formamide concentration, salt concentration, chaotropic salt concentration pH, organic solvent concentration, etc.

These parameters may also be used to control non-specific binding, as is generally outlined in U.S. Patent No. 5,681,697. Thus it may be desirable to perform certain steps at higher stringency conditions to reduce non-specific binding.

The reactions outlined herein may be accomplished in a variety of ways.

Components of the reaction may be added simultaneously, or sequentially, in different orders, with preferred embodiments outlined below. In addition, the reaction may include a variety of other reagents. These include salts, buffers, neutral proteins, e.g. albumin, detergents, *etc.*

5 which may be used to facilitate optimal hybridization and detection, and/or reduce non-specific or background interactions. Reagents that otherwise improve the efficiency of the assay, such as protease inhibitors, nuclease inhibitors, anti-microbial agents, *etc.*, may also be used as appropriate, depending on the sample preparation methods and purity of the target.

The assay data are analyzed to determine the expression levels, and changes in  
10 expression levels as between states, of individual genes, forming a gene expression profile.

Screens are performed to identify modulators of the prostate cancer phenotype. In one embodiment, screening is performed to identify modulators that can induce or suppress a particular expression profile, thus preferably generating the associated phenotype. In another embodiment, *e.g.*, for diagnostic applications, having identified  
15 differentially expressed genes important in a particular state, screens can be performed to identify modulators that alter expression of individual genes. In another embodiment, screening is performed to identify modulators that alter a biological function of the expression product of a differentially expressed gene. Again, having identified the importance of a gene in a particular state, screens are performed to identify agents that bind  
20 and/or modulate the biological activity of the gene product.

In addition screens can be done for genes that are induced in response to a candidate agent. After identifying a modulator based upon its ability to suppress a prostate cancer expression pattern leading to a normal expression pattern, or to modulate a single prostate cancer gene expression profile so as to mimic the expression of the gene from  
25 normal tissue, a screen as described above can be performed to identify genes that are specifically modulated in response to the agent. Comparing expression profiles between normal tissue and agent treated prostate cancer tissue reveals genes that are not expressed in normal tissue or prostate cancer tissue, but are expressed in agent treated tissue. These agent-specific sequences can be identified and used by methods described herein for prostate cancer  
30 genes or proteins. In particular these sequences and the proteins they encode find use in marking or identifying agent treated cells. In addition, antibodies can be raised against the

agent induced proteins and used to target novel therapeutics to the treated prostate cancer tissue sample.

Thus, in one embodiment, a test compound is administered to a population of prostate cancer cells, that have an associated prostate cancer expression profile. By  
5 “administration” or “contacting” herein is meant that the candidate agent is added to the cells in such a manner as to allow the agent to act upon the cell, whether by uptake and intracellular action, or by action at the cell surface. In some embodiments, nucleic acid encoding a proteinaceous candidate agent (i.e., a peptide) may be put into a viral construct such as an adenoviral or retroviral construct, and added to the cell, such that expression of  
10 the peptide agent is accomplished, e.g., PCT US97/01019. Regulatable gene therapy systems can also be used.

Once the test compound has been administered to the cells, the cells can be washed if desired and are allowed to incubate under preferably physiological conditions for some period of time. The cells are then harvested and a new gene expression profile is  
15 generated, as outlined herein.

Thus, e.g., prostate cancer tissue may be screened for agents that modulate, e.g., induce or suppress the prostate cancer phenotype. A change in at least one gene, preferably many, of the expression profile indicates that the agent has an effect on prostate cancer activity. By defining such a signature for the prostate cancer phenotype, screens for  
20 new drugs that alter the phenotype can be devised. With this approach, the drug target need not be known and need not be represented in the original expression screening platform, nor does the level of transcript for the target protein need to change.

In a preferred embodiment, as outlined above, screens may be done on individual genes and gene products (proteins). That is, having identified a particular  
25 differentially expressed gene as important in a particular state, screening of modulators of either the expression of the gene or the gene product itself can be done. The gene products of differentially expressed genes are sometimes referred to herein as “prostate cancer proteins” or a “prostate cancer modulatory protein”. The prostate cancer modulatory protein may be a fragment, or alternatively, be the full length protein to the fragment encoded by the nucleic  
30 acids of Tables 1-16. Preferably, the prostate cancer modulatory protein is a fragment. In a preferred embodiment, the prostate cancer amino acid sequence which is used to determine

sequence identity or similarity is encoded by a nucleic acid of Tables 1-16. In another embodiment, the sequences are naturally occurring allelic variants of a protein encoded by a nucleic acid of Tables 1-16. In another embodiment, the sequences are sequence variants as further described herein.

5                    Preferably, the prostate cancer modulatory protein is a fragment of approximately 14 to 24 amino acids long. More preferably the fragment is a soluble fragment. Preferably, the fragment includes a non-transmembrane region. In a preferred embodiment, the fragment has an N-terminal Cys to aid in solubility. In one embodiment, the C-terminus of the fragment is kept as a free acid and the N-terminus is a free amine to aid in  
10 coupling, i.e., to cysteine.

                    In one embodiment the prostate cancer proteins are conjugated to an immunogenic agent as discussed herein. In one embodiment the prostate cancer protein is conjugated to BSA.

                    Measurements of prostate cancer polypeptide activity, or of prostate cancer or  
15 the prostate cancer phenotype can be performed using a variety of assays. For example, the effects of the test compounds upon the function of the prostate cancer polypeptides can be measured by examining parameters described above. A suitable physiological change that affects activity can be used to assess the influence of a test compound on the polypeptides of this invention. When the functional consequences are determined using intact cells or  
20 animals, one can also measure a variety of effects such as, in the case of prostate cancer associated with tumors, tumor growth, tumor metastasis, neovascularization, hormone release, transcriptional changes to both known and uncharacterized genetic markers (e.g., northern blots), changes in cell metabolism such as cell growth or pH changes, and changes in intracellular second messengers such as cGMP. In the assays of the invention, mammalian  
25 prostate cancer polypeptide is typically used, e.g., mouse, preferably human.

                    Assays to identify compounds with modulating activity can be performed *in vitro*. For example, a prostate cancer polypeptide is first contacted with a potential modulator and incubated for a suitable amount of time, e.g., from 0.5 to 48 hours. In one embodiment, the prostate cancer polypeptide levels are determined *in vitro* by measuring the level of  
30 protein or mRNA. The level of protein is measured using immunoassays such as western blotting, ELISA and the like with an antibody that selectively binds to the prostate cancer



polypeptide or a fragment thereof. For measurement of mRNA, amplification, e.g., using PCR, LCR, or hybridization assays, e.g., northern hybridization, RNase protection, dot blotting, are preferred. The level of protein or mRNA is detected using directly or indirectly labeled detection agents, e.g., fluorescently or radioactively labeled nucleic acids,  
5 radioactively or enzymatically labeled antibodies, and the like, as described herein.

Alternatively, a reporter gene system can be devised using the prostate cancer protein promoter operably linked to a reporter gene such as luciferase, green fluorescent protein, CAT, or  $\beta$ -gal. The reporter construct is typically transfected into a cell. After treatment with a potential modulator, the amount of reporter gene transcription, translation, or  
10 activity is measured according to standard techniques known to those of skill in the art.

In a preferred embodiment, as outlined above, screens may be done on individual genes and gene products (proteins). That is, having identified a particular differentially expressed gene as important in a particular state, screening of modulators of the expression of the gene or the gene product itself can be done. The gene products of  
15 differentially expressed genes are sometimes referred to herein as "prostate cancer proteins." The prostate cancer protein may be a fragment, or alternatively, be the full length protein to a fragment shown herein.

In one embodiment, screening for modulators of expression of specific genes is performed. Typically, the expression of only one or a few genes are evaluated. In another  
20 embodiment, screens are designed to first find compounds that bind to differentially expressed proteins. These compounds are then evaluated for the ability to modulate differentially expressed activity. Moreover, once initial candidate compounds are identified, variants can be further screened to better evaluate structure activity relationships.

In a preferred embodiment, binding assays are done. In general, purified or  
25 isolated gene product is used; that is, the gene products of one or more differentially expressed nucleic acids are made. For example, antibodies are generated to the protein gene products, and standard immunoassays are run to determine the amount of protein present. Alternatively, cells comprising the prostate cancer proteins can be used in the assays.

Thus, in a preferred embodiment, the methods comprise combining a prostate  
30 cancer protein and a candidate compound, and determining the binding of the compound to the prostate cancer protein. Preferred embodiments utilize the human prostate cancer protein,

although other mammalian proteins may also be used, e.g. for the development of animal models of human disease. In some embodiments, as outlined herein, variant or derivative prostate cancer proteins may be used.

Generally, in a preferred embodiment of the methods herein, the prostate cancer protein or the candidate agent is non-diffusably bound to an insoluble support having isolated sample receiving areas (e.g. a microtiter plate, an array, etc.). The insoluble supports may be made of any composition to which the compositions can be bound, is readily separated from soluble material, and is otherwise compatible with the overall method of screening. The surface of such supports may be solid or porous and of any convenient shape. Examples of suitable insoluble supports include microtiter plates, arrays, membranes and beads. These are typically made of glass, plastic (e.g., polystyrene), polysaccharides, nylon or nitrocellulose, teflon™, etc. Microtiter plates and arrays are especially convenient because a large number of assays can be carried out simultaneously, using small amounts of reagents and samples. The particular manner of binding of the composition is not crucial so long as it is compatible with the reagents and overall methods of the invention, maintains the activity of the composition and is nondiffusable. Preferred methods of binding include the use of antibodies (which do not sterically block either the ligand binding site or activation sequence when the protein is bound to the support), direct binding to "sticky" or ionic supports, chemical crosslinking, the synthesis of the protein or agent on the surface, etc. Following binding of the protein or agent, excess unbound material is removed by washing. The sample receiving areas may then be blocked through incubation with bovine serum albumin (BSA), casein or other innocuous protein or other moiety.

In a preferred embodiment, the prostate cancer protein is bound to the support, and a test compound is added to the assay. Alternatively, the candidate agent is bound to the support and the prostate cancer protein is added. Novel binding agents include specific antibodies, non-natural binding agents identified in screens of chemical libraries, peptide analogs, etc. Of particular interest are screening assays for agents that have a low toxicity for human cells. A wide variety of assays may be used for this purpose, including labeled in vitro protein-protein binding assays, electrophoretic mobility shift assays, immunoassays for protein binding, functional assays (phosphorylation assays, etc.) and the like.

The determination of the binding of the test modulating compound to the prostate cancer protein may be done in a number of ways. In a preferred embodiment, the compound is labeled, and binding determined directly, e.g., by attaching all or a portion of the prostate cancer protein to a solid support, adding a labeled candidate agent (e.g., a  
5 fluorescent label), washing off excess reagent, and determining whether the label is present on the solid support. Various blocking and washing steps may be utilized as appropriate.

In some embodiments, only one of the components is labeled, e.g., the proteins (or proteinaceous candidate compounds) can be labeled. Alternatively, more than one component can be labeled with different labels, e.g.,  $^{125}\text{I}$  for the proteins and a fluorophor  
10 for the compound. Proximity reagents, e.g., quenching or energy transfer reagents are also useful.

In one embodiment, the binding of the test compound is determined by competitive binding assay. The competitor is a binding moiety known to bind to the target molecule (i.e., a prostate cancer protein), such as an antibody, peptide, binding partner,  
15 ligand, etc. Under certain circumstances, there may be competitive binding between the compound and the binding moiety, with the binding moiety displacing the compound. In one embodiment, the test compound is labeled. Either the compound, or the competitor, or both, is added first to the protein for a time sufficient to allow binding, if present. Incubations may be performed at a temperature which facilitates optimal activity, typically between 4 and  
20 40°C. Incubation periods are typically optimized, e.g., to facilitate rapid high throughput screening. Typically between 0.1 and 1 hour will be sufficient. Excess reagent is generally removed or washed away. The second component is then added, and the presence or absence of the labeled component is followed, to indicate binding.

In a preferred embodiment, the competitor is added first, followed by the test  
25 compound. Displacement of the competitor is an indication that the test compound is binding to the prostate cancer protein and thus is capable of binding to, and potentially modulating, the activity of the prostate cancer protein. In this embodiment, either component can be labeled. Thus, e.g., if the competitor is labeled, the presence of label in the wash solution indicates displacement by the agent. Alternatively, if the test compound is labeled, the  
30 presence of the label on the support indicates displacement.

In an alternative embodiment, the test compound is added first, with incubation and washing, followed by the competitor. The absence of binding by the competitor may indicate that the test compound is bound to the prostate cancer protein with a higher affinity. Thus, if the test compound is labeled, the presence of the label on the support, coupled with a lack of competitor binding, may indicate that the test compound is capable of binding to the prostate cancer protein.

In a preferred embodiment, the methods comprise differential screening to identify agents that are capable of modulating the activity of the prostate cancer proteins. In this embodiment, the methods comprise combining a prostate cancer protein and a competitor in a first sample. A second sample comprises a test compound, a prostate cancer protein, and a competitor. The binding of the competitor is determined for both samples, and a change, or difference in binding between the two samples indicates the presence of an agent capable of binding to the prostate cancer protein and potentially modulating its activity. That is, if the binding of the competitor is different in the second sample relative to the first sample, the agent is capable of binding to the prostate cancer protein.

Alternatively, differential screening is used to identify drug candidates that bind to the native prostate cancer protein, but cannot bind to modified prostate cancer proteins. The structure of the prostate cancer protein may be modeled, and used in rational drug design to synthesize agents that interact with that site. Drug candidates that affect the activity of a prostate cancer protein are also identified by screening drugs for the ability to either enhance or reduce the activity of the protein.

Positive controls and negative controls may be used in the assays. Preferably control and test samples are performed in at least triplicate to obtain statistically significant results. Incubation of all samples is for a time sufficient for the binding of the agent to the protein. Following incubation, samples are washed free of non-specifically bound material and the amount of bound, generally labeled agent determined. For example, where a radiolabel is employed, the samples may be counted in a scintillation counter to determine the amount of bound compound.

A variety of other reagents may be included in the screening assays. These include reagents like salts, neutral proteins, e.g. albumin, detergents, etc. which may be used to facilitate optimal protein-protein binding and/or reduce non-specific or background

interactions. Also reagents that otherwise improve the efficiency of the assay, such as protease inhibitors, nuclease inhibitors, anti-microbial agents, etc., may be used. The mixture of components may be added in an order that provides for the requisite binding.

5 In a preferred embodiment, the invention provides methods for screening for a compound capable of modulating the activity of a prostate cancer protein. The methods comprise adding a test compound, as defined above, to a cell comprising prostate cancer proteins. Preferred cell types include almost any cell. The cells contain a recombinant nucleic acid that encodes a prostate cancer protein. In a preferred embodiment, a library of candidate agents are tested on a plurality of cells.

10 In one aspect, the assays are evaluated in the presence or absence or previous or subsequent exposure of physiological signals, e.g. hormones, antibodies, peptides, antigens, cytokines, growth factors, action potentials, pharmacological agents including chemotherapeutics, radiation, carcinogenics, or other cells (i.e. cell-cell contacts). In another example, the determinations are determined at different stages of the cell cycle process.

15 In this way, compounds that modulate prostate cancer agents are identified. Compounds with pharmacological activity are able to enhance or interfere with the activity of the prostate cancer protein. Once identified, similar structures are evaluated to identify critical structural feature of the compound.

20 In one embodiment, a method of inhibiting prostate cancer cell division is provided. The method comprises administration of a prostate cancer inhibitor. In another embodiment, a method of inhibiting prostate cancer is provided. The method comprises administration of a prostate cancer inhibitor. In a further embodiment, methods of treating cells or individuals with prostate cancer are provided. The method comprises administration of a prostate cancer inhibitor.

25 In one embodiment, a prostate cancer inhibitor is an antibody as discussed above. In another embodiment, the prostate cancer inhibitor is an antisense molecule.

A variety of cell growth, proliferation, and metastasis assays are known to those of skill in the art, as described below.

*Soft agar growth or colony formation in suspension*

30 Normal cells require a solid substrate to attach and grow. When the cells are transformed, they lose this phenotype and grow detached from the substrate. For example,

transformed cells can grow in stirred suspension culture or suspended in semi-solid media, such as semi-solid or soft agar. The transformed cells, when transfected with tumor suppressor genes, regenerate normal phenotype and require a solid substrate to attach and grow. Soft agar growth or colony formation in suspension assays can be used to identify  
5 modulators of prostate cancer sequences, which when expressed in host cells, inhibit abnormal cellular proliferation and transformation. A therapeutic compound would reduce or eliminate the host cells' ability to grow in stirred suspension culture or suspended in semi-solid media, such as semi-solid or soft.

Techniques for soft agar growth or colony formation in suspension assays are  
10 described in Freshney, *Culture of Animal Cells a Manual of Basic Technique* (3<sup>rd</sup> ed., 1994), herein incorporated by reference. See also, the methods section of Garkavtsev *et al.* (1996), *supra*, herein incorporated by reference.

*Contact inhibition and density limitation of growth*

Normal cells typically grow in a flat and organized pattern in a petri dish until  
15 they touch other cells. When the cells touch one another, they are contact inhibited and stop growing. When cells are transformed, however, the cells are not contact inhibited and continue to grow to high densities in disorganized foci. Thus, the transformed cells grow to a higher saturation density than normal cells. This can be detected morphologically by the formation of a disoriented monolayer of cells or rounded cells in foci within the regular  
20 pattern of normal surrounding cells. Alternatively, labeling index with (<sup>3</sup>H)-thymidine at saturation density can be used to measure density limitation of growth. See Freshney (1994), *supra*. The transformed cells, when transfected with tumor suppressor genes, regenerate a normal phenotype and become contact inhibited and would grow to a lower density.

In this assay, labeling index with (<sup>3</sup>H)-thymidine at saturation density is a  
25 preferred method of measuring density limitation of growth. Transformed host cells are transfected with a prostate cancer-associated sequence and are grown for 24 hours at saturation density in non-limiting medium conditions. The percentage of cells labeling with (<sup>3</sup>H)-thymidine is determined autoradiographically. See, Freshney (1994), *supra*.

*Growth factor or serum dependence*

Transformed cells have a lower serum dependence than their normal counterparts (see, e.g., Temin, *J. Natl. Cancer Inst.* 37:167-175 (1966); Eagle *et al.*, *J. Exp. Med.* 131:836-879 (1970)); Freshney, *supra*. This is in part due to release of various growth factors by the transformed cells. Growth factor or serum dependence of transformed host cells can be compared with that of control.

*Tumor specific markers levels*

Tumor cells release an increased amount of certain factors (hereinafter "tumor specific markers") than their normal counterparts. For example, plasminogen activator (PA) is released from human glioma at a higher level than from normal brain cells (see, e.g., Gullino, *Angiogenesis, tumor vascularization, and potential interference with tumor growth*, in *Biological Responses in Cancer*, pp. 178-184 (Mihich (ed.) 1985)). Similarly, Tumor angiogenesis factor (TAF) is released at a higher level in tumor cells than their normal counterparts. See, e.g., Folkman, *Angiogenesis and Cancer*, *Sem Cancer Biol.* (1992)).

Various techniques which measure the release of these factors are described in Freshney (1994), *supra*. Also, see, Unkless *et al.*, *J. Biol. Chem.* 249:4295-4305 (1974); Strickland & Beers, *J. Biol. Chem.* 251:5694-5702 (1976); Whur *et al.*, *Br. J. Cancer* 42:305-312 (1980); Gullino, *Angiogenesis, tumor vascularization, and potential interference with tumor growth*, in *Biological Responses in Cancer*, pp. 178-184 (Mihich (ed.) 1985); Freshney *Anticancer Res.* 5:111-130 (1985).

*Invasiveness into Matrigel*

The degree of invasiveness into Matrigel or some other extracellular matrix constituent can be used as an assay to identify compounds that modulate prostate cancer-associated sequences. Tumor cells exhibit a good correlation between malignancy and invasiveness of cells into Matrigel or some other extracellular matrix constituent. In this assay, tumorigenic cells are typically used as host cells. Expression of a tumor suppressor gene in these host cells would decrease invasiveness of the host cells.

Techniques described in Freshney (1994), *supra*, can be used. Briefly, the level of invasion of host cells can be measured by using filters coated with Matrigel or some

other extracellular matrix constituent. Penetration into the gel, or through to the distal side of the filter, is rated as invasiveness, and rated histologically by number of cells and distance moved, or by prelabeling the cells with  $^{125}\text{I}$  and counting the radioactivity on the distal side of the filter or bottom of the dish. *See, e.g., Freshney (1984), supra.*

5

#### *Tumor growth in vivo*

Effects of prostate cancer-associated sequences on cell growth can be tested in transgenic or immune-suppressed mice. Knock-out transgenic mice can be made, in which the prostate cancer gene is disrupted or in which a prostate cancer gene is inserted. Knock-out transgenic mice can be made by insertion of a marker gene or other heterologous gene into the endogenous prostate cancer gene site in the mouse genome via homologous recombination. Such mice can also be made by substituting the endogenous prostate cancer gene with a mutated version of the prostate cancer gene, or by mutating the endogenous prostate cancer gene, e.g., by exposure to carcinogens.

15 A DNA construct is introduced into the nuclei of embryonic stem cells. Cells containing the newly engineered genetic lesion are injected into a host mouse embryo, which is re-implanted into a recipient female. Some of these embryos develop into chimeric mice that possess germ cells partially derived from the mutant cell line. Therefore, by breeding the chimeric mice it is possible to obtain a new line of mice containing the introduced genetic lesion (*see, e.g., Capecchi et al., Science 244:1288 (1989)*). Chimeric targeted mice can be derived according to Hogan *et al., Manipulating the Mouse Embryo: A Laboratory Manual*, Cold Spring Harbor Laboratory (1988) and *Teratocarcinomas and Embryonic Stem Cells: A Practical Approach*, Robertson, ed., IRL Press, Washington, D.C., (1987).

25 Alternatively, various immune-suppressed or immune-deficient host animals can be used. For example, genetically athymic "nude" mouse (*see, e.g., Giovanella et al., J. Natl. Cancer Inst. 52:921 (1974)*), a SCID mouse, a thymectomized mouse, or an irradiated mouse (*see, e.g., Bradley et al., Br. J. Cancer 38:263 (1978)*; Selby *et al., Br. J. Cancer 41:52 (1980)*) can be used as a host. Transplantable tumor cells (typically about  $10^6$  cells) injected into isogenic hosts will produce invasive tumors in a high proportions of cases, while 30 normal cells of similar origin will not. In hosts which developed invasive tumors, cells expressing a prostate cancer-associated sequences are injected subcutaneously. After a



suitable length of time, preferably 4-8 weeks, tumor growth is measured (e.g., by volume or by its two largest dimensions) and compared to the control. Tumors that have statistically significant reduction (using, e.g., Student's T test) are said to have inhibited growth.

## 5    **Methods of identifying variant prostate cancer-associated sequences**

Without being bound by theory, expression of various prostate cancer sequences is correlated with prostate cancer. Accordingly, disorders based on mutant or variant prostate cancer genes may be determined. In one embodiment, the invention provides methods for identifying cells containing variant prostate cancer genes, e.g., determining all or  
10    part of the sequence of at least one endogenous prostate cancer genes in a cell. This may be accomplished using any number of sequencing techniques. In a preferred embodiment, the invention provides methods of identifying the prostate cancer genotype of an individual, e.g., determining all or part of the sequence of at least one prostate cancer gene of the individual. This is generally done in at least one tissue of the individual, and may include the evaluation  
15    of a number of tissues or different samples of the same tissue. The method may include comparing the sequence of the sequenced prostate cancer gene to a known prostate cancer gene, i.e., a wild-type gene.

The sequence of all or part of the prostate cancer gene can then be compared to the sequence of a known prostate cancer gene to determine if any differences exist. This  
20    can be done using any number of known homology programs, such as Bestfit, etc. In a preferred embodiment, the presence of a difference in the sequence between the prostate cancer gene of the patient and the known prostate cancer gene correlates with a disease state or a propensity for a disease state, as outlined herein.

In a preferred embodiment, the prostate cancer genes are used as probes to  
25    determine the number of copies of the prostate cancer gene in the genome.

In another preferred embodiment, the prostate cancer genes are used as probes to determine the chromosomal localization of the prostate cancer genes. Information such as chromosomal localization finds use in providing a diagnosis or prognosis in particular when chromosomal abnormalities such as translocations, and the like are identified in the prostate  
30    cancer gene locus.

### Administration of pharmaceutical and vaccine compositions

In one embodiment, a therapeutically effective dose of a prostate cancer protein or modulator thereof, is administered to a patient. By "therapeutically effective dose" herein is meant a dose that produces effects for which it is administered. The exact dose will  
5 depend on the purpose of the treatment, and will be ascertainable by one skilled in the art using known techniques (e.g., Ansel *et al.*, *Pharmaceutical Dosage Forms and Drug Delivery*; Lieberman, *Pharmaceutical Dosage Forms* (vols. 1-3, 1992), Dekker, ISBN 0824770846, 082476918X, 0824712692, 0824716981; Lloyd, *The Art, Science and Technology of Pharmaceutical Compounding* (1999); and Pickar, *Dosage Calculations*  
10 (1999)). As is known in the art, adjustments for prostate cancer degradation, systemic versus localized delivery, and rate of new protease synthesis, as well as the age, body weight, general health, sex, diet, time of administration, drug interaction and the severity of the condition may be necessary, and will be ascertainable with routine experimentation by those skilled in the art. U.S. Patent Application N. 09/687,576, further discloses the use of  
15 compositions and methods of diagnosis and treatment in prostate cancer is hereby expressly incorporated by reference.

A "patient" for the purposes of the present invention includes both humans and other animals, particularly mammals. Thus the methods are applicable to both human therapy and veterinary applications. In the preferred embodiment the patient is a mammal,  
20 preferably a primate, and in the most preferred embodiment the patient is human.

The administration of the prostate cancer proteins and modulators thereof of the present invention can be done in a variety of ways as discussed above, including, but not limited to, orally, subcutaneously, intravenously, intranasally, transdermally, intraperitoneally, intramuscularly, intrapulmonary, vaginally, rectally, or intraocularly. In  
25 some instances, e.g., in the treatment of wounds and inflammation, the prostate cancer proteins and modulators may be directly applied as a solution or spray.

The pharmaceutical compositions of the present invention comprise a prostate cancer protein in a form suitable for administration to a patient. In the preferred embodiment, the pharmaceutical compositions are in a water soluble form, such as being present as  
30 pharmaceutically acceptable salts, which is meant to include both acid and base addition salts. "Pharmaceutically acceptable acid addition salt" refers to those salts that retain the

biological effectiveness of the free bases and that are not biologically or otherwise undesirable, formed with inorganic acids such as hydrochloric acid, hydrobromic acid, sulfuric acid, nitric acid, phosphoric acid and the like, and organic acids such as acetic acid, propionic acid, glycolic acid, pyruvic acid, oxalic acid, maleic acid, malonic acid, succinic acid, fumaric acid, tartaric acid, citric acid, benzoic acid, cinnamic acid, mandelic acid, methanesulfonic acid, ethanesulfonic acid, p-toluenesulfonic acid, salicylic acid and the like. "Pharmaceutically acceptable base addition salts" include those derived from inorganic bases such as sodium, potassium, lithium, ammonium, calcium, magnesium, iron, zinc, copper, manganese, aluminum salts and the like. Particularly preferred are the ammonium, potassium, sodium, calcium, and magnesium salts. Salts derived from pharmaceutically acceptable organic non-toxic bases include salts of primary, secondary, and tertiary amines, substituted amines including naturally occurring substituted amines, cyclic amines and basic ion exchange resins, such as isopropylamine, trimethylamine, diethylamine, triethylamine, tripropylamine, and ethanolamine.

The pharmaceutical compositions may also include one or more of the following: carrier proteins such as serum albumin; buffers; fillers such as microcrystalline cellulose, lactose, corn and other starches; binding agents; sweeteners and other flavoring agents; coloring agents; and polyethylene glycol.

The pharmaceutical compositions can be administered in a variety of unit dosage forms depending upon the method of administration. For example, unit dosage forms suitable for oral administration include, but are not limited to, powder, tablets, pills, capsules and lozenges. It is recognized that prostate cancer protein modulators (e.g., antibodies, antisense constructs, ribozymes, small organic molecules, *etc.*) when administered orally, should be protected from digestion. This is typically accomplished either by complexing the molecule(s) with a composition to render it resistant to acidic and enzymatic hydrolysis, or by packaging the molecule(s) in an appropriately resistant carrier, such as a liposome or a protection barrier. Means of protecting agents from digestion are well known in the art.

The compositions for administration will commonly comprise a prostate cancer protein modulator dissolved in a pharmaceutically acceptable carrier, preferably an aqueous carrier. A variety of aqueous carriers can be used, e.g., buffered saline and the like. These solutions are sterile and generally free of undesirable matter. These compositions may

be sterilized by conventional, well known sterilization techniques. The compositions may contain pharmaceutically acceptable auxiliary substances as required to approximate physiological conditions such as pH adjusting and buffering agents, toxicity adjusting agents and the like, e.g., sodium acetate, sodium chloride, potassium chloride, calcium chloride, sodium lactate and the like. The concentration of active agent in these formulations can vary widely, and will be selected primarily based on fluid volumes, viscosities, body weight and the like in accordance with the particular mode of administration selected and the patient's needs (e.g., *Remington's Pharmaceutical Science* (15th ed., 1980) and Goodman & Gillman, *The Pharmacological Basis of Therapeutics* (Hardman *et al.*, eds., 1996)).

Thus, a typical pharmaceutical composition for intravenous administration would be about 0.1 to 10 mg per patient per day. Dosages from 0.1 up to about 100 mg per patient per day may be used, particularly when the drug is administered to a secluded site and not into the blood stream, such as into a body cavity or into a lumen of an organ.

Substantially higher dosages are possible in topical administration. Actual methods for preparing parenterally administrable compositions will be known or apparent to those skilled in the art, e.g., *Remington's Pharmaceutical Science* and Goodman and Gillman, *The Pharmacological Basis of Therapeutics, supra*.

The compositions containing modulators of prostate cancer proteins can be administered for therapeutic or prophylactic treatments. In therapeutic applications, compositions are administered to a patient suffering from a disease (e.g., a cancer) in an amount sufficient to cure or at least partially arrest the disease and its complications. An amount adequate to accomplish this is defined as a "therapeutically effective dose." Amounts effective for this use will depend upon the severity of the disease and the general state of the patient's health. Single or multiple administrations of the compositions may be administered depending on the dosage and frequency as required and tolerated by the patient. In any event, the composition should provide a sufficient quantity of the agents of this invention to effectively treat the patient. An amount of modulator that is capable of preventing or slowing the development of cancer in a mammal is referred to as a "prophylactically effective dose." The particular dose required for a prophylactic treatment will depend upon the medical condition and history of the mammal, the particular cancer being prevented, as well as other factors such as age, weight, gender, administration route, efficiency, *etc.* Such prophylactic

treatments may be used, *e.g.*, in a mammal who has previously had cancer to prevent a recurrence of the cancer, or in a mammal who is suspected of having a significant likelihood of developing cancer.

5 It will be appreciated that the present prostate cancer protein-modulating compounds can be administered alone or in combination with additional prostate cancer modulating compounds or with other therapeutic agent, *e.g.*, other anti-cancer agents or treatments.

10 In numerous embodiments, one or more nucleic acids, *e.g.*, polynucleotides comprising nucleic acid sequences set forth in Tables 1-16, such as antisense polynucleotides or ribozymes, will be introduced into cells, *in vitro* or *in vivo*. The present invention provides methods, reagents, vectors, and cells useful for expression of prostate cancer-associated polypeptides and nucleic acids using *in vitro* (cell-free), *ex vivo* or *in vivo* (cell or organism-based) recombinant expression systems.

15 The particular procedure used to introduce the nucleic acids into a host cell for expression of a protein or nucleic acid is application specific. Many procedures for introducing foreign nucleotide sequences into host cells may be used. These include the use of calcium phosphate transfection, spheroplasts, electroporation, liposomes, microinjection, plasma vectors, viral vectors and any of the other well known methods for introducing cloned genomic DNA, cDNA, synthetic DNA or other foreign genetic material into a host cell (*see*,  
20 *e.g.*, Berger & Kimmel, *Guide to Molecular Cloning Techniques, Methods in Enzymology* volume 152 (Berger), Ausubel *et al.*, eds., *Current Protocols* (supplemented through 1999), and Sambrook *et al.*, *Molecular Cloning - A Laboratory Manual* (2nd ed., Vol. 1-3, 1989).

25 In a preferred embodiment, prostate cancer proteins and modulators are administered as therapeutic agents, and can be formulated as outlined above. Similarly, prostate cancer genes (including both the full-length sequence, partial sequences, or regulatory sequences of the prostate cancer coding regions) can be administered in a gene therapy application. These prostate cancer genes can include antisense applications, either as gene therapy (*i.e.* for incorporation into the genome) or as antisense compositions, as will be appreciated by those in the art.

30 Prostate cancer polypeptides and polynucleotides can also be administered as vaccine compositions to stimulate HTL, CTL and antibody responses.. Such vaccine

compositions can include, e.g., lipidated peptides (*see, e.g., Vitiello, A. et al., J. Clin. Invest.* 95:341 (1995)), peptide compositions encapsulated in poly(DL-lactide-co-glycolide) ("PLG") microspheres (*see, e.g., Eldridge, et al., Molec. Immunol.* 28:287-294, (1991); Alonso *et al., Vaccine* 12:299-306 (1994); Jones *et al., Vaccine* 13:675-681 (1995)), peptide compositions  
5 contained in immune stimulating complexes (ISCOMS) (*see, e.g., Takahashi et al., Nature* 344:873-875 (1990); Hu *et al., Clin Exp Immunol.* 113:235-243 (1998)), multiple antigen peptide systems (MAPs) (*see, e.g., Tam, Proc. Natl. Acad. Sci. U.S.A.* 85:5409-5413 (1988); Tam, *J. Immunol. Methods* 196:17-32 (1996)), peptides formulated as multivalent peptides; peptides for use in ballistic delivery systems, typically crystallized peptides, viral delivery  
10 vectors (Perkus, *et al., In: Concepts in vaccine development* (Kaufmann, ed., p. 379, 1996); Chakrabarti, *et al., Nature* 320:535 (1986); Hu *et al., Nature* 320:537 (1986); Kieny, *et al., AIDS Bio/Technology* 4:790 (1986); Top *et al., J. Infect. Dis.* 124:148 (1971); Chanda *et al., Virology* 175:535 (1990)), particles of viral or synthetic origin (*see, e.g., Kofler et al., J. Immunol. Methods.* 192:25 (1996); Eldridge *et al., Sem. Hematol.* 30:16 (1993); Falo *et al.,*  
15 *Nature Med.* 7:649 (1995)), adjuvants (Warren *et al., Annu. Rev. Immunol.* 4:369 (1986); Gupta *et al., Vaccine* 11:293 (1993)), liposomes (Reddy *et al., J. Immunol.* 148:1585 (1992); Rock, *Immunol. Today* 17:131 (1996)), or, naked or particle absorbed cDNA (Ulmer, *et al., Science* 259:1745 (1993); Robinson *et al., Vaccine* 11:957 (1993); Shiver *et al., In: Concepts in vaccine development* (Kaufmann, ed., p. 423, 1996); Cease & Berzofsky, *Annu. Rev.*  
20 *Immunol.* 12:923 (1994) and Eldridge *et al., Sem. Hematol.* 30:16 (1993)). Toxin-targeted delivery technologies, also known as receptor mediated targeting, such as those of Avant Immunotherapeutics, Inc. (Needham, Massachusetts) may also be used.

Vaccine compositions often include adjuvants. Many adjuvants contain a substance designed to protect the antigen from rapid catabolism, such as aluminum hydroxide  
25 or mineral oil, and a stimulator of immune responses, such as lipid A, *Bordetella pertussis* or *Mycobacterium tuberculosis* derived proteins. Certain adjuvants are commercially available as, e.g., Freund's Incomplete Adjuvant and Complete Adjuvant (Difco Laboratories, Detroit, MI); Merck Adjuvant 65 (Merck and Company, Inc., Rahway, NJ); AS-2 (SmithKline Beecham, Philadelphia, PA); aluminum salts such as aluminum hydroxide gel (alum) or  
30 aluminum phosphate; salts of calcium, iron or zinc; an insoluble suspension of acylated tyrosine; acylated sugars; cationically or anionically derivatized polysaccharides;

polyphosphazenes; biodegradable microspheres; monophosphoryl lipid A and quil A. Cytokines, such as GM-CSF, interleukin-2, -7, -12, and other like growth factors, may also be used as adjuvants.

Vaccines can be administered as nucleic acid compositions wherein DNA or  
5 RNA encoding one or more of the polypeptides, or a fragment thereof, is administered to a patient. This approach is described, for instance, in Wolff *et. al.*, *Science* 247:1465 (1990) as well as U.S. Patent Nos. 5,580,859; 5,589,466; 5,804,566; 5,739,118; 5,736,524; 5,679,647; WO 98/04720; and in more detail below. Examples of DNA-based delivery technologies include "naked DNA", facilitated (bupivacaine, polymers, peptide-mediated) delivery,  
10 cationic lipid complexes, and particle-mediated ("gene gun") or pressure-mediated delivery (*see, e.g.*, U.S. Patent No. 5,922,687).

For therapeutic or prophylactic immunization purposes, the peptides of the invention can be expressed by viral or bacterial vectors. Examples of expression vectors include attenuated viral hosts, such as vaccinia or fowlpox. This approach involves the use of  
15 vaccinia virus, *e.g.*, as a vector to express nucleotide sequences that encode prostate cancer polypeptides or polypeptide fragments. Upon introduction into a host, the recombinant vaccinia virus expresses the immunogenic peptide, and thereby elicits an immune response. Vaccinia vectors and methods useful in immunization protocols are described in, *e.g.*, U.S. Patent No. 4,722,848. Another vector is BCG (Bacille Calmette Guerin). BCG vectors are  
20 described in Stover *et al.*, *Nature* 351:456-460 (1991). A wide variety of other vectors useful for therapeutic administration or immunization *e.g.* adeno and adeno-associated virus vectors, retroviral vectors, *Salmonella typhi* vectors, detoxified anthrax toxin vectors, and the like, will be apparent to those skilled in the art from the description herein (*see, e.g.*, Shata *et al.*, *Mol Med Today* 6:66-71 (2000); Shedlock *et al.*, *J Leukoc Biol* 68:793-806 (2000); Hipp *et al.*, *In Vivo* 14:571-85 (2000)).  
25

Methods for the use of genes as DNA vaccines are well known, and include placing a prostate cancer gene or portion of a prostate cancer gene under the control of a regulatable promoter or a tissue-specific promoter for expression in a prostate cancer patient. The prostate cancer gene used for DNA vaccines can encode full-length prostate cancer  
30 proteins, but more preferably encodes portions of the prostate cancer proteins including peptides derived from the prostate cancer protein. In one embodiment, a patient is

immunized with a DNA vaccine comprising a plurality of nucleotide sequences derived from a prostate cancer gene. For example, prostate cancer-associated genes or sequence encoding subfragments of a prostate cancer protein are introduced into expression vectors and tested for their immunogenicity in the context of Class I MHC and an ability to generate cytotoxic T cell responses. This procedure provides for production of cytotoxic T cell responses against cells which present antigen, including intracellular epitopes.

In a preferred embodiment, the DNA vaccines include a gene encoding an adjuvant molecule with the DNA vaccine. Such adjuvant molecules include cytokines that increase the immunogenic response to the prostate cancer polypeptide encoded by the DNA vaccine. Additional or alternative adjuvants are available.

In another preferred embodiment prostate cancer genes find use in generating animal models of prostate cancer. When the prostate cancer gene identified is repressed or diminished in cancer tissue, gene therapy technology, e.g., wherein antisense RNA directed to the prostate cancer gene will also diminish or repress expression of the gene. Animal models of prostate cancer find use in screening for modulators of a prostate cancer-associated sequence or modulators of prostate cancer. Similarly, transgenic animal technology including gene knockout technology, e.g. as a result of homologous recombination with an appropriate gene targeting vector, will result in the absence or increased expression of the prostate cancer protein. When desired, tissue-specific expression or knockout of the prostate cancer protein may be necessary.

It is also possible that the prostate cancer protein is overexpressed in prostate cancer. As such, transgenic animals can be generated that overexpress the prostate cancer protein. Depending on the desired expression level, promoters of various strengths can be employed to express the transgene. Also, the number of copies of the integrated transgene can be determined and compared for a determination of the expression level of the transgene. Animals generated by such methods find use as animal models of prostate cancer and are additionally useful in screening for modulators to treat prostate cancer.

#### **Kits for Use in Diagnostic and/or Prognostic Applications**

For use in diagnostic, research, and therapeutic applications suggested above, kits are also provided by the invention. In the diagnostic and research applications such kits



may include any or all of the following: assay reagents, buffers, prostate cancer-specific nucleic acids or antibodies, hybridization probes and/or primers, antisense polynucleotides, ribozymes, dominant negative prostate cancer polypeptides or polynucleotides, small molecules inhibitors of prostate cancer-associated sequences *etc.* A therapeutic product may include sterile saline or another pharmaceutically acceptable emulsion and suspension base.

In addition, the kits may include instructional materials containing directions (i.e., protocols) for the practice of the methods of this invention. While the instructional materials typically comprise written or printed materials they are not limited to such. Any medium capable of storing such instructions and communicating them to an end user is contemplated by this invention. Such media include, but are not limited to electronic storage media (e.g., magnetic discs, tapes, cartridges, chips), optical media (e.g., CD ROM), and the like. Such media may include addresses to internet sites that provide such instructional materials.

The present invention also provides for kits for screening for modulators of prostate cancer-associated sequences. Such kits can be prepared from readily available materials and reagents. For example, such kits can comprise one or more of the following materials: a prostate cancer-associated polypeptide or polynucleotide, reaction tubes, and instructions for testing prostate cancer-associated activity. Optionally, the kit contains biologically active prostate cancer protein. A wide variety of kits and components can be prepared according to the present invention, depending upon the intended user of the kit and the particular needs of the user. Diagnosis would typically involve evaluation of a plurality of genes or products. The genes will be selected based on correlations with important parameters in disease which may be identified in historical or outcome data.

## EXAMPLES

**Example 1: Tissue Preparation, Labeling Chips, and Fingerprints**5 Purifying total RNA from tissue sample using TRIzol Reagent

The sample weight is first estimated. The tissue samples are homogenized in 1 ml of TRIzol per 50 mg of tissue using a homogenizer (e.g., Polytron 3100). The size of the generator/probe used depends upon the sample amount. A generator that is too large for the amount of tissue to be homogenized will cause a loss of sample and lower RNA yield. A  
10 larger generator (e.g., 20 mm) is suitable for tissue samples weighing more than 0.6 g. Fill tubes should not be overfilled. If the working volume is greater than 2 ml and no greater than 10 ml, a 15 ml polypropylene tube (Falcon 2059) is suitable for homogenization.

Tissues should be kept frozen until homogenized. The TRIzol is added directly to the frozen tissue before homogenization. Following homogenization, the insoluble  
15 material is removed from the homogenate by centrifugation at 7500 x g for 15 min. in a Sorvall superspeed or 12,000 x g for 10 min. in an Eppendorf centrifuge at 4°C. The cleared homogenate is then transferred to a new tube(s). Samples may be frozen and stored at -60 to -70°C for at least one month or else continue with the purification.

The next process is phase separation. The homogenized samples are incubated  
20 for 5 minutes at room temperature. Then, 0.2 ml of chloroform per 1ml of TRIzol reagent is added to the homogenization mixture. The tubes are securely capped and shaken vigorously by hand (do not vortex) for 15 seconds. The samples are then incubated at room temp. for 2-3 minutes and next centrifuged at 6500 rpm in a Sorvall superspeed for 30 min. at 4°C.

The next process is RNA Precipitation. The aqueous phase is transferred to a  
25 fresh tube. The organic phase can be saved if isolation of DNA or protein is desired. Then 0.5 ml of isopropyl alcohol is added per 1ml of TRIzol reagent used in the original homogenization. Then, the tubes are securely capped and inverted to mix. The samples are then incubated at room temp. for 10 minutes and centrifuged at 6500 rpm in Sorvall for 20 min. at 4°C.

The RNA is then washed. The supernatant is poured off and the pellet washed with cold 75% ethanol. 1 ml of 75% ethanol is used per 1 ml of the TRIzol reagent used in the initial homogenization. The tubes are capped securely and inverted several times to loosen pellet without vortexing. They are next centrifuged at <8000 rpm (<7500 x g) for 5 minutes at 4°C.

The RNA wash is decanted. The pellet is carefully transferred to an Eppendorf tube (sliding down the tube into the new tube by use of a pipet tip to help guide it in if necessary). Tube(s) sizes for precipitating the RNA depending on the working volumes. Larger tubes may take too long to dry. Dry pellet. The RNA is then resuspended in an appropriate volume (e.g., 2 -5 ug/ul) of DEPC H<sub>2</sub>O. The absorbance is then measured.

The poly A+ mRNA may next be purified from total RNA by other methods such as Qiagen's RNeasy kit. The poly A<sup>+</sup> mRNA is purified from total RNA by adding the oligotex suspension which has been heated to 37°C and mixing prior to adding to RNA. The Elution Buffer is incubated at 70°C. If there is precipitate in the buffer, warm up the 2 x Binding Buffer at 65°C. The the total RNA is mixed with DEPC-treated water, 2 x Binding Buffer, and Oligotex according to Table 2 on page 16 of the Oligotex Handbook and next incubated for 3 minutes at 65°C and 10 minutes at room temperature.

The preparation is centrifuged for 2 minutes at 14,000 to 18,000 g, preferably, at a "soft setting," The supernatant is removed without disturbing Oligotex pellet. A little bit of solution can be left behind to reduce the loss of Oligotex. The supernatant is saved until satisfactory binding and elution of poly A<sup>+</sup> mRNA has been found.

Then, the preparation is gently resuspended in Wash Buffer OW2 and pipetted onto the spin column and centrifuged at full speed (soft setting if possible) for 1 minute.

Next, the spin column is transferred to a new collection tube and gently resuspended in Wash Buffer OW2 and centrifuged as described herein.

Then, the spin column is transferred to a new tube and eluted with 20 to 100 ul of preheated (70°C) Elution Buffer. The Oligotex resin is gently resuspended by pipetting up and down. The centrifugation is repeated as above and the elution repeated with fresh elution buffer or first eluate to keep the elution volume low.

The absorbance is next read to determine the yield, using diluted Elution Buffer as the blank.

- Before proceeding with cDNA synthesis, the mRNA is precipitated before proceeding with cDNA synthesis, as components leftover or in the Elution Buffer from the
- 5 Oligotex purification procedure will inhibit downstream enzymatic reactions of the mRNA. 0.4 vol. of 7.5 M NH<sub>4</sub>OAc + 2.5 vol. of cold 100% ethanol is added and the preparation precipitated at -20°C 1 hour to overnight (or 20-30 min. at -70°C), and centrifuged at 14,000-16,000 x g for 30 minutes at 4°C. Next, the pellet is washed with 0.5 ml of 80% ethanol (-20°C) and then centrifuged at 14,000-16,000 x g for 5 minutes at room temperature.
- 10 The 80% ethanol wash is then repeated. The last bit of ethanol from the pellet is then dried without use of a speed vacuum and the pellet is then resuspended in DEPC H<sub>2</sub>O at 1ug/ul concentration.

Alternatively the RNA may be purified using other methods (e.g., Qiagen's RNeasy kit).

- 15 No more than 100 ug is added to the RNeasy column. The sample volume is adjusted to 100 ul with RNase-free water. 350 ul Buffer RLT and then 250 ul ethanol (100%) are added to the sample. The preparation is then mixed by pipetting and applied to an RNeasy mini spin column for centrifugation (15 sec at >10,000 rpm). If yield is low, reapply the flowthrough to the column and centrifuge again.
- 20 Then, transfer column to a new 2 ml collection tube and add 500 ul Buffer RPE and centrifuge for 15 sec at >10,000 rpm. The flowthrough is discarded. 500 ul Buffer RPE and is then added and the preparation is centrifuged for 15 sec at >10,000 rpm. The flowthrough is discarded. and the column membrane dried by centrifuging for 2 min at maximum speed. The column is transferred to a new 1.5-ml collection tube. 30-50 ul of
- 25 RNase-free water is applied directly onto column membrane. The column is then centrifuged for 1 min at >10,000 rpm and the elution step repeated.

The absorbance is then read to determine yield. If necessary, the material may be ethanol precipitated with ammonium acetate and 2.5X volume 100% ethanol.

- 30 First Strand cDNA Synthesis

The first strand can be made using using Gibco's "SuperScript Choice System for cDNA Synthesis" kit. The starting material is 5 ug of total RNA or 1 ug of polyA+ mRNA. For total RNA, 2 ul of SuperScript RT is used; for polyA+ mRNA, 1 ul of SuperScript RT is used. The final volume of first strand synthesis mix is 20 ul. The RNA should be in a volume no greater than 10 ul. The RNA is incubated with 1 ul of 100 pmol T7-T24 oligo for 10 min at 70°C followed by addition on ice of 7 ul of: 4ul 5X 1<sup>st</sup> Strand Buffer, 2 ul of 0.1M DTT, and 1 ul of 10mM dNTP mix. The preparation is then incubated at 37°C for 2 min before addition of the SuperScript RT followed by incubation at 37°C for 1 hour.

#### Second Strand Synthesis

For the second strand synthesis, place 1st strand reactions on ice and add: 91 ul DEPC H<sub>2</sub>O; 30 ul 5X 2nd Strand Buffer; 3 ul 10mM dNTP mix; 1 ul 10 U/ul E.coli DNA Ligase; 4 ul 10 U/ul E.coli DNA Polymerase; and 1 ul 2 U/ul RNase H. Mix and incubate 2 hours at 16°C. Add 2 ul T4 DNA Polymerase. Incubate 5 min at 16°C. Add 10 ul of 0.5M EDTA.

#### Cleaning up cDNA

The cDNA is purified using Phenol:Chloroform:Isoamyl Alcohol (25:24:1) and Phase-Lock gel tubes. The PLG tubes are centrifuged for 30 sec at maximum speed. The cDNA mix is then transferred to PLG tube. An equal volume of phenol:chloroform:isamyl alcohol is then added, the preparation shaken vigorously (no vortexing), and centrifuged for 5 minutes at maximum speed. The top aqueous solution is transferred to a new tube and ethanol precipitated by adding 7.5X 5M NH<sub>4</sub>OAc and 2.5X volume of 100% ethanol. Next, it is centrifuged immediately at room temperature for 20 min, maximum speed. The supernatant is removed, and the pellet washed with 2X with cold 80% ethanol. As much ethanol wash as possible should be removed before air drying the pellet; and resuspending it in 3 ul RNase-free water.

In vitro Transcription (IVT) and labeling with biotin

In vitro Transcription (IVT) and labeling with biotin is performed as follows:  
Pipet 1.5 ul of cDNA into a thin-wall PCR tube. Make NTP labeling mix by combining 2 ul  
T7 10xATP (75 mM) (Ambion); 2 ul T7 10xGTP (75 mM) (Ambion); 1.5 ul T7 10xCTP (75  
5 mM) (Ambion); 1.5 ul T7 10xUTP (75 mM) (Ambion); 3.75 ul 10 mM Bio-11-UTP  
(Boehringer-Mannheim/Roche or Enzo); 3.75 ul 10 mM Bio-16-CTP (Enzo); 2 ul 10x T7  
transcription buffer (Ambion); and 2 ul 10x T7 enzyme mix (Ambion). The final volume is  
20 ul. Incubate 6 hours at 37°C in a PCR machine. The RNA can be further cleaned.  
Clean-up follows the previous instructions for RNeasy columns or Qiagen's RNeasy protocol  
10 handbook. The cRNA often needs to be ethanol precipitated by resuspension in a volume  
compatible with the fragmentation step.

Fragmentation is performed as follows. 15 ug of labeled RNA is usually  
fragmented. Try to minimize the fragmentation reaction volume; a 10 ul volume is  
recommended but 20 ul is all right. Do not go higher than 20 ul because the magnesium in  
15 the fragmentation buffer contributes to precipitation in the hybridization buffer. Fragment  
RNA by incubation at 94 C for 35 minutes in 1 x Fragmentation buffer (5 x Fragmentation  
buffer is 200 mM Tris-acetate, pH 8.1; 500 mM KOAc; 150 mM MgOAc). The labeled  
RNA transcript can be analyzed before and after fragmentation. Samples can be heated to  
65°C for 15 minutes and electrophoresed on 1% agarose/TBE gels to get an approximate idea  
20 of the transcript size range.

For hybridization, 200 ul (10 ug cRNA) of a hybridization mix is put on the  
chip. If multiple hybridizations are to be done (such as cycling through a 5 chip set), then it  
is recommended that an initial hybridization mix of 300 ul or more be made. The  
hybridization mix is: fragment labeled RNA (50 ng/ul final conc.); 50 pM 948-b control  
25 oligo; 1.5 pM BioB; 5 pM BioC; 25 pM BioD; 100 pM CRE; 0.1 mg/ml herring sperm DNA;  
0.5 mg/ml acetylated BSA; and 300 ul with 1xMES hyb buffer.

The hybridization reaction is conducted with non-biotinylated IVT (purified  
by RNeasy columns) (see example 1 for steps from tissue to IVT): The following mixture is  
prepared:

IVT antisense RNA; 4 µg:	µl
Random Hexamers (1 µg/µl):	4 µl
H <sub>2</sub> O:	<u>µl</u>
	14 µl

- 5 Incubate the above 14 µl mixture at 70°C for 10 min.; then put on ice.

The Reverse transcription procedure uses the following mixture:

0.1 M DTT:	3 µl
50X dNTP mix:	0.6 µl
H <sub>2</sub> O:	2.4 µl
10 Cy3 or Cy5 dUTP (1mM):	3 µl
SS RT II (BRL):	1 µl
	<u>        </u>
	16 µl

The above solution is added to the hybridization reaction and incubated for 30 min., 42°C.

- 15 Then, 1 µl SSII is added and incubated for another hour before being placed on ice.

The 50X dNTP mix contains 25mM of cold dATP, dCTP, and dGTP, 10mM of dTTP and is made by adding 25 µl each of 100mM dATP, dCTP, and dGTP; 10 µl of 100mM dTTP to 15 µl H<sub>2</sub>O. ]

- 20 RNA degradation is performed as follows. Add 86 µl H<sub>2</sub>O, 1.5 µl 1M NaOH/ 2 mM EDTA and incubate at 65°C, 10 min.. For U-Con 30, 500 µl TE/sample spin at 7000 g for 10 min, save flow through for purification. For Qiagen purification, suspend u-con recovered material in 500 µl buffer PB and proceed using Qiagen protocol. For DNase digestion, add 1 ul of 1/100 dilution of DNase/30 ul Rx and incubate at 37°C for 15 min. Incubate at 5 min 95°C to denature the DNase.

25

#### Sample preparation

For sample preparation, add Cot-1 DNA, 10 µl; 50X dNTPs, 1 µl; 20X SSC, 2.3 µl; Na pyro phosphate, 7.5 µl; 10 mg/ml Herring sperm DNA; 1 ul of 1/10 dilution to 21.8 final vol. Dry in speed vac. Resuspend in 15 µl H<sub>2</sub>O. Add 0.38 µl 10% SDS. Heat

95°C, 2 min and slow cool at room temp. for 20 min. Put on slide and hybridize overnight at 64°C. Washing after the hybridization: 3X SSC/0.03% SDS: 2 min., 37.5 ml 20X SSC+0.75ml 10% SDS in 250ml H<sub>2</sub>O; 1X SSC: 5 min., 12.5 ml 20X SSC in 250ml H<sub>2</sub>O; 0.2X SSC: 5 min., 2.5 ml 20X SSC in 250ml H<sub>2</sub>O. Dry slides and scan at appropriate PMT's and channels.

### Example 2: Taxol resistant Xenograft Model of Human Prostate Cancer

Treatment regimens that include paclitaxel (Taxol; Bristol-Myers Squibb Company, Princeton, NJ) have been particularly successful in treating hormone-refractory prostate cancer in the phase II setting (Smith et al., Semin. Oncol. 26(1 Suppl 2):109-11 (1999)). However, many patients develop tumors which are initially, or later become, resistant to taxol. To identify genes that may be involved with resistance to taxol, or are regulated in response to taxol resistance, and therefore may be used to treat, or identify, taxol resistance in patients, the following experiments were carried out.

The androgen-independent human cell line CWR22R was grown as a xenograft in nude mice (Nagabhushan et al., Cancer Res. 56(13):3042-3046 (1996); Agus et al., J. Natl. Cancer Inst. 91(21):1869-1876 (1999); Bubendorf et al., J. Natl. Cancer Inst. 91(20):1758-1764 (1999)). Initially, these xenograft tumors were sensitive to therapeutic doses of taxol. The mice were treated continuously with sub-therapeutic doses, and the tumors were allowed to grow for 3-4 weeks, before surgical removal of the tumors. The tumor from an individual mouse was then minced, and a small portion was then injected into a healthy nude mouse, establishing a second passage of the tumor. This mouse was then treated continuously with the same sub-therapeutic dose of taxol. This process was repeated 14 times, and a portion of each generation of xenograft tumor was collected. There was increasing resistance to therapeutic doses of taxol with each generation. By the end of the process, the tumors were fully resistant to therapeutic doses of taxol. RNA from each generation of tumor was then isolated, and individual mRNA species were quantified using a custom Affymetrix GeneChip® oligonucleotide microarray, with probes to interrogate approximately 35,000



unique mRNA transcripts. Genes were selected that showed a statistically significant up-regulation, or down-regulation, during the subsequent generations of increasingly taxol-resistant tumors. Only one gene was significantly up-regulated, whereas 24 genes were down-regulated; these are presented in Table 10.

The gene sequences identified to be overexpressed in prostate cancer may be used to identify coding regions from the public DNA database. The sequences may be used  
5 to either identify genes that encode known proteins, or they may be used to predict the coding regions from genomic DNA using exon prediction algorithms, such as FGENESH (Salamov and Solovyev, 2000, Genome Res. 10:516-522). In addition, one of ordinary skill in the art would understand how to obtain the unigene cluster identification and sequence information according to the exemplar accession numbers provided in Tables 1-16. (see,  
10 <http://www.ncbi.nlm.nih.gov/UniGene/>).

15

**TABLE1:** shows genes, including expression sequence tags, differentially expressed in prostate tumor tissue compared to normal tissue as analyzed using the Affymetrix/Eos Hu01 GeneChip array. Shown are the relative amounts of each gene expressed in prostate tumor samples and various normal tissue samples showing the highest expression of the gene.

	Pkey:	Unique Eos probeset identifier number			
10	ExAccn:	Exemplar Accession number, Genbank accession number			
	UnigeneID:	Unigene number			
	Unigene Title:	Unigene gene title			
	R1:	Ratio of tumor to normal body tissue			
15					
	Pkey	UnigeneID	ExAccn	Unigene Title	R1
	131919	Hs.272458	AA121266	ESTs	37.2
	120328	Hs.290905	AA196979	ESTs; Weakly similar to (define not ava	32.6
20	105201	Hs.31412	AA195626	ESTs	30.1
	101486	Hs.1852	M24902	acid phosphatase; prostate	25.2
	119073	Hs.279477	R32894	ESTs	24.8
	133428	Hs.183752	M34376	microseminoprotein; beta-	23.8
	128180	Hs.171995	AA595348	kallikrein 3; (prostate specific antigen	21.4
25	104080	Hs.57771	AA402971	Homo sapiens mRNA for serine protease (T	18.9
	127537	Hs.162859	AA599531	ESTs	18.6
	131665	Hs.30343	R22139	ESTs	17.4
	101050	Hs.1832	K01911	neuropeptide Y	17.3
	130771	Hs.1915	N48056	folate hydrolase (prostate-specific memb	17
30	108153	Hs.40808	AA054237	ESTs	16.9
	107485	Hs.262476	W63793	S-adenosylmethionine decarboxylase 1	16.7
	106155	Hs.33287	AA425309	ESTs	16.5
	129534	Hs.11260	R73640	ESTs	16.4
	100569	Hs.171995	HG2261-HT2351	Antigen, Prostate Specific, Alt. Splice	16
35	101889	Hs.181350	S39329	kallikrein 2; prostatic	15.4
	135389	Hs.99872	U05237	fetal Alzheimer antigen	15
	101506	Hs.62192	M27436	coagulation factor III (thromboplastin;	13.9
	134374	Hs.8238	D62633	ESTs	12.7
	133944	Hs.7780	AA045870	ESTs	12.5
40	109141	Hs.193380	AA176428	ESTs	12.3
	130974	Hs.2178	X57985	H2B histone family; member Q	11.8
	114768	Hs.182339	AA149007	ESTs	11.8
	104394	Hs.172129	H46617	yp19h1.r1 Soares breast 3NbHBst Homo sap	11.8
	125299	Hs.102720	Z39436	ESTs	11.6
45	104660	Hs.14846	AA007160	ESTs	11.4
	100116	Hs.78045	D00654	actin; gamma 2; smooth muscle; enteric	11
	131061	Hs.268744	N64328	ESTs; Moderately similar to KIAA0273 [H.	10.9
	126645	126645	AI167942	Homo sapiens BAC clone RG041D11 from 7q2	10.7
	135153	Hs.95420	N40141	Homo sapiens mRNA for JM27 protein; comp	10.6
50	107033	Hs.113314	AA599629	ESTs	10.6
	118417		N66048	ESTs; Weakly similar to polymerase [H.sa	10.5
	126758	Hs.293960	W37145	ESTs	10.2
	115874	Hs.8364	AA406542	ESTs	10.1
	134989	Hs.92381	AA236324	ESTs; Weakly similar to !!!! ALU CLASS A	10.1
55	107102	Hs.30652	AA609723	ESTs	10.1
	116787	Hs.15641	H28581	ESTs	10.1
	115719	Hs.59622	AA416997	ESTs	10
	123209	Hs.203270	AA489711	ESTs	9.9
	101664	Hs.121017	M60752	H2A histone family; member A	9.8
60	112971	Hs.83883	T17185	ESTs	9.7
	102519	Hs.80296	U52969	Purkinje cell protein 4	9.7
	117984	Hs.106778	N51919	ESTs	9.7
	105840	Hs.22209	AA398533	ESTs	9.4
	129523	Hs.274509	M30894	T-cell receptor; gamma cluster	9.4
65	132964	Hs.167133	AA031360	ESTs	9.2
	121853	Hs.98502	AA425887	ESTs	9

	115784	Hs.91011	AA421562	anterior gradient 2 (Xenopus laevis; sec	8.9
	119617	Hs.55999	W47380	ESTs	8.9
	100552	Hs.301946	HG2167-HT2237	Protein Kinase H131, Camp-Dependent	8.9
5	105627	Hs.23317	AA281245	ESTs	8.8
	101461	Hs.76422	M22430	phospholipase A2; group IIA (platelets;	8.7
	131725	Hs.31146	AA456264	ESTs; Highly similar to (define not ava	8.5
	124526	Hs.293185	N62096	yz81c5.s1 Soares_multiple_sclerosis_2NbH	8.5
	118528	Hs.49397	N67889	ESTs	8.2
	133845	Hs.76704	T68510	ESTs	8.2
10	133354	Hs.334762	AA055552	ESTs; Weakly similar to KIAA0319 [H.sapi	8.1
	105912	Hs.20415	AA402000	ESTs; Weakly similar to GS3786 [H.sapien	8
	119018	Hs.278695	N95786	ESTs	8
	100394	Hs.68052	D84276	CD38 antigen (p45)	8
	114132	Hs.24192	Z38688	ESTs	7.9
15	116786	Hs.301527	H25836	tumor necrosis factor (ligand) superfam	7.7
	106579	Hs.23023	AA456135	ESTs	7.6
	128790	Hs.105700	AA291725	secreted frizzled-related protein 4	7.5
	114965	Hs.72472	AA250737	ESTs	7.4
	112033	Hs.22627	R43162	ESTs	7.1
20	102398		U42359	Human N33 protein form 1 (N33) gene, exo	7
	101201	Hs.2256	L22524	matrix metalloproteinase 7 (matrilysin;	6.9
	109272	Hs.288462	AA195718	ESTs	6.9
	103145	Hs.169849	X66276	myosin-binding protein C; slow-type	6.9
	101803	Hs.155691	M86546	pre-B-cell leukemia transcription factor	6.8
25	120562	Hs.302267	AA280036	ESTs; Weakly similar to W01A6.c [C.elega	6.8
	109112	Hs.257924	AA169379	ESTs	6.8
	109795	Hs.326416	F10707	ESTs	6.7
	107532	Hs.173684	Z19643	ESTs; Weakly similar to (define not ava	6.7
	130336	Hs.171895	X07730	kallikrein 3; (prostate specific antigen	6.6
30	131425	Hs.26691	AA219134	ESTs	6.6
	120588	Hs.16193	AA281591	Homo sapiens mRNA; cDNA DKFZp586B211 (fr	6.6
	132902	Hs.59838	AA490969	ESTs	6.6
	125674	Hs.323378	W28078	H.sapiens mRNA for transmembrane protein	6.6
	133724	Hs.75746	U07919	aldehyde dehydrogenase 6	6.5
35	130343	Hs.278628	AA490262	ESTs; Moderately similar to APXL gene pr	6.5
	120215	Hs.108787	Z41050	Homo sapiens Mcd4p homolog mRNA; complet	6.5
	129215	Hs.126085	AA176867	ESTs	6.5
	131881	Hs.3383	AA010183	upstream regulatory element binding prot	6.5
	133376	Hs.7232	T23670	ESTs	6.4
40	105376	Hs.8768	AA236559	ESTs; Weakly similar to neuronal thread	6.4
	104674	Hs.26289	AA009527	ESTs	6.4
	100727	Hs.334786	X07290	Human HF.12 gene mRNA	6.3
	130150	Hs.15113	AF000573	homogentisate 1,2-dioxygenase (homogenti	6.3
45	121770	Hs.278428	AA421714	Homo sapiens mRNA for KIAA0896 protein;	6.3
	123475	Hs.250528	AA599267	ESTs; Weakly similar to ANKYRIIN; BRAIN V	6.3
	133061	Hs.298638	AB000584	prostate differentiation factor	6.3
	116429	Hs.279923	AA609710	ESTs; Weakly similar to similar to GTP-b	6.2
	101233	Hs.878	L29008	sorbitol dehydrogenase	6.2
	104691	Hs.37744	AA011176	ESTs	6.2
50	127248		AA325029	EST27953 Cerebellum II Homo sapiens cDNA	6.2
	127775	Hs.179902	H04106	ESTs; Weakly similar to (define not ava	6.2
	105500	Hs.222399	AA256485	ESTs	6.1
	131463	Hs.2714	X74142	forkhead (Drosophila)-like 1	6.1
	132116	Hs.40289	AA234767	ESTs	6
55	130828	Hs.203213	AA053400	ESTs	5.9
	115357	Hs.72988	AA281793	ESTs	5.8
	105496	Hs.301997	AA256323	ESTs	5.7
	116334	Hs.48948	AA491457	ESTs	5.7
	107968	Hs.61539	AA034020	ESTs	5.7
60	120132	Hs.125019	Z38839	ESTs; Weakly similar to IIII ALU SUBFAMI	5.6
	106375	Hs.289072	AA443993	ESTs	5.6
	132550	Hs.170195	AA029597	bone morphogenetic protein 7 (osteogenic	5.6
	124777	Hs.140237	R41933	ESTs; Weakly similar to neuronal thread	5.6
	100311	Hs.337616	D50640	phosphodiesterase 3B; cGMP-inhibited	5.6
65	101791	Hs.62354	M83822	Human beige-like protein (BGL) mRNA; par	5.5
	117698	Hs.45107	N41002	ESTs	5.5
	132387	Hs.281434	R70914	heat shock 70kD protein 1	5.5
	122041	Hs.98732	AA431407	Homo sapiens Chromosome 16 BAC clone CIT	5.5
	133723	Hs.262476	AA088851	S-adenosylmethionine decarboxylase 1	5.5

	113938	W81598	ESTs	5.4
	133015	Hs.246315 AA047036	ESTs	5.4
	125745	Hs.75722 A1283493	ribophorin II	5.4
5	107295	Hs.80120 T34527	UDP-N-acetyl-alpha-D-galactosamine:polyp	5.4
	108186	Hs.77780 AA056482	ESTs	5.3
	100184	Hs.21223 D17408	calponin 1; basic; smooth muscle	5.3
	104466	Hs.326382 N25110	Human guanine nucleotide exchange factor	5.3
	104033	Hs.98944 AA365031	ESTs	5.3
	110844	Hs.167531 N31952	ESTs; Weakly similar to (define not ava	5.3
10	129056	Hs.108336 H70627	ESTs; Weakly similar to IIII ALU SUBFAM	5.3
	102805	Hs.25351 U90304	iroquols-class homeodomain protein	5.3
	133493	Hs.194369 AA284143	Homo sapiens chromosome 1 atrophin-1 rel	5.3
	129184	Hs.109201 W26769	ESTs; Highly similar to (define not ava	5.2
	134158	Hs.79428 U15174	BCL2/adenovirus E1B 19kD-interacting pro	5.2
15	107240	Hs.159872 D59368	ESTs	5.2
	104787	AA027317	ESTs; Weakly similar to IIII ALU SUBFAM	5.2
	123527	Hs.108327 AA086679	damage-specific DNA binding protein 1 (1	5.2
	116646	Hs.194228 F03048	ESTs; Moderately similar to IIII ALU SUB	5.2
20	101448	Hs.195850 M21389	keratin 5 (epidermolysis bullosa simplex	5.1
	116188	Hs.184598 AA464728	ESTs; Weakly similar to IIII ALU SUBFAM	5.1
	126259	Hs.281428 Z21472	ESTs; Moderately similar to IIII ALU SUB	5.1
	105921	Hs.169119 AA402613	ESTs	5.1
	103375	Hs.54416 X91868	shc oculis homeobox (Drosophila) homolo	5.1
25	128871	Hs.106778 AA400271	ESTs; Highly similar to (define not ava	5.1
	112681	Hs.148932 R87331	ESTs; Moderately similar to semaphorin V	5.1
	105784	Hs.228434 AA350771	ESTs	5.1
	116238	Hs.47144 AA479362	ESTs	5
	102913	Hs.80342 X07696	keratin 15	5
30	103011	Hs.326035 X52541	early growth response 1	5
	126023	H58881	yr36d09.r1 Soares fetal liver spleen 1NF	5
	103709	Hs.13804 AA037316	ESTs	5
	118981	Hs.39288 N93839	ESTs; Weakly similar to IIII ALU SUBFAM	5
	134807	Hs.89732 X78932	zinc finger protein 273	5
35	100079	Hs.23311 AB002365	Human mRNA for KIAA0367 gene; partial cd	4.9
	132047	Hs.3786 D83492	EphB6	4.9
	132880	Hs.177537 AA444369	ESTs	4.9
	124049	Hs.74519 F10523	primase; polypeptide 2A (58kD)	4.8
	133330	Hs.71119 U42360	Human N33 mRNA; complete cds	4.8
	104776	AA026349	ESTs	4.8
40	122593	Hs.128749 AA453310	Homo sapiens alpha-methylacyl-CoA racema	4.8
	103912	Hs.143087 AA251078	ESTs	4.8
	113981	Hs.26009 W86307	Homo sapiens mRNA for KIAA0860 protein;	4.8
	105288	Hs.3585 AA233168	ESTs; Weakly similar to coded for by C.	4.8
	135035	Hs.284186 H89575	ESTs	4.8
45	104144	Hs.183390 AA447439	ESTs; Weakly similar to ZINC FINGER PROT	4.8
	129389	Hs.288126 AA621604	ESTs	4.8
	125982	R98091	RAE1 (RNA export 1; S.pombe) homolog	4.8
	125182	Hs.26243 W44682	ESTs	4.8
	103023	Hs.117950 X53793	multifunctional polypeptide similar to S	4.7
50	129735	W80701	ESTs; Weakly similar to HERV-E envelope	4.7
	104479	Hs.106390 N36040	ESTs	4.7
	103731	AA070545	zm7c3.r1 Stratagene neuroepithelium (#93	4.7
	126575	Hs.127602 W72416	ESTs	4.7
55	124578	Hs.231500 N68321	Human glucose transporter-like protein-1	4.7
	130617	Hs.1674 M90516	glutamine-fructose-6-phosphate transamin	4.7
	116752	Hs.91622 H06373	Homo sapiens clone 24456 mRNA sequence	4.7
	100279	Hs.82007 D42084	Human mRNA for KIAA0094 gene; partial cd	4.7
	126288	Hs.89576 A1479264	ESTs	4.7
	131836	Hs.32990 AA610086	ESTs	4.7
60	106717	Hs.239489 AA465093	TIA1 cytotoxic granule-associated RNA-bi	4.7
	114542	Hs.91011 AA055768	ESTs	4.6
	103806	AA130614	zo1f2.r1 Stratagene neuroepithelium NT2R	4.6
	130529	AA173238	small inducible cytokine A5 (RANTES)	4.6
	115675	Hs.82065 AA406546	ESTs	4.6
65	111386	Hs.293798 N95326	ESTs	4.6
	106503	Hs.29679 AA452411	ESTs	4.6
	119943	Hs.14158 W86835	copine III	4.6
	104459	Hs.100070 M91493	EST	4.6
	100774	Hs.89603 HG371-HT1063	Mucin 1, Epithelial, Alt. Splice 6	4.6

	100652	Hs.142653	HG2825-HT2949	Ret Transforming Gene	4.6
	132015	Hs.3731	D11900	ESTs	4.6
	126086		H70875	yr73g01.r1 Soares fetal liver spleen 1NF	4.6
	130888	Hs.173094	F03819	ESTs	4.6
5	106390	Hs.20166	AA446964	Prostate stem cell antigen	4.6
	126959		AA199853	ESTs; Moderately similar to !!!!! ALU SUB	4.5
	131584	Hs.29117	X91648	H.sapiens mRNA for pur alpha extended 3'	4.5
	104838	Hs.20953	AA039481	ESTs	4.5
	125661		R50319	ESTs	4.5
10	103171	Hs.234726	X68733	alpha-1-antichymotrypsin	4.5
	103928	Hs.199160	AA280085	ESTs	4.5
	102899	Hs.75730	X06272	signal recognition particle receptor (d	4.5
	100892	Hs.180789	HG4557-HT4962	Small Nuclear Ribonucleoprotein U1, 1snr	4.5
	106167	Hs.7956	AA425906	ESTs	4.5
15	129404	Hs.317584	AA172056	ESTs	4.5
	106990	Hs.24758	AA521354	ESTs	4.5
	132316	Hs.44566	U28831	Human protein immuno-reactive with anti-	4.4
	132056	Hs.38176	T89386	Homo sapiens mRNA for KIAA0606 protein;	4.4
	133718	Hs.198760	X15306	neurofilament; heavy polypeptide (200kD)	4.4
20	101470	Hs.1846	M22898	tumor protein p53 (Li-Fraumeni syndrome)	4.4
	131904	Hs.284296	AA143019	ESTs; Highly similar to surface 4 integr	4.4
	105804	Hs.22514	AA383142	ESTs	4.4
	122861	Hs.119394	AA464428	ESTs	4.4
	111336	Hs.28994	N79565	ESTs	4.4
25	121944	Hs.98518	AA429278	ESTs	4.4
	134401	Hs.211577	AA243746	ESTs; Highly similar to CG1 protein [H.s	4.4
	126458	Hs.289969	AA815252	ESTs; Weakly similar to !!!!! ALU SUBFAM1	4.4
	133435	Hs.323966	T23983	ESTs; Moderately similar to !!!!! ALU SUB	4.4
	105178	Hs.21941	AA187490	ESTs	4.3
30	127315		AA640834	nr27b06.r1 NCL_CGAP_P13 Homo sapiens cDN	4.3
	132645	Hs.54424	X87870	H.sapiens mRNA for hepatocyte nuclear fa	4.3
	116162	Hs.282990	AA461487	ESTs; Weakly similar to F52C12.2 [C.eleg	4.3
	118040	Hs.47567	N52876	EST	4.3
	130008	Hs.278427	M31423	cerebellar degeneration-related protein	4.3
35	126607	Hs.114688	W87424	ESTs	4.3
	123061	Hs.105130	AA482030	EST	4.3
	109391	Hs.184245	AA219699	ESTs	4.3
	109175		AA180496	ESTs	4.3
	127003	Hs.173540	AA550806	ESTs; Weakly similar to (define not ava	4.3
40	102547	Hs.46638	U57911	chromosome 11 open reading frame 8	4.3
	134208	Hs.79993	U88871	peroxisomal biogenesis factor 7	4.3
	104258	Hs.5462	AF007216	solute carrier family 4; sodium bicarbon	4.3
	130759	Hs.18946	AA094720	ESTs; Weakly similar to (define not ava	4.3
	132160	Hs.295923	AA281770	seven in absentia (Drosophila) homolog 1	4.3
45	135062	Hs.93872	AA174183	ESTs	4.3
	126510	Hs.334762	R49702	ESTs; Weakly similar to KIAA0319 [H.sapi	4.2
	122055	Hs.98747	AA431732	EST	4.2
	133136	Hs.6574	AF007165	suppressin (nuclear deformed epidermal a	4.2
	109890	Hs.20843	H04649	ESTs	4.2
50	133294	Hs.69997	R79723	H.sapiens mRNA for transtien associated z	4.2
	134436	Hs.83190	S80437	fatty acid synthase (3' region) [human,	4.2
	107375	Hs.251064	U88573	NBR2	4.2
	122223	Hs.27413	AA436158	ESTs	4.2
	103044	Hs.248210	X55777	H.sapiens Mahlavu hepatocellular carcino	4.2
55	120125	Hs.59815	W99362	EST	4.2
	128969	Hs.283978	T65327	ESTs; Highly similar to (define not ava	4.2
	129637	Hs.1179	D90359	TATA box binding protein (TBP)-associate	4.2
	106566		AA455921	ESTs; Weakly similar to !!!!! ALU SUBFAM1	4.2
	112605	Hs.29852	R78220	ESTs	4.2
60	103364	Hs.279929	X90872	H.sapiens mRNA for gp25L2 protein	4.2
	132811	Hs.57419	U25435	transcriptional repressor	4.2
	126570	Hs.326292	T79274	ESTs	4.2
	116298	Hs.94109	AA489046	ESTs	4.2
	103024	Hs.105938	X53961	lactotransferin	4.1
65	129133	Hs.108850	R56728	yg95c6.r1 Soares infant brain 1N1B Homo	4.1
	133167	Hs.6641	N98707	kinesin family member 5C	4.1
	126871	Hs.14051	AA351779	ESTs	4.1
	132333	Hs.45032	AA182157	ESTs	4.1
	107376	Hs.327179	U90545	solute carrier family 17 (sodium phospho	4.1

	128517	Hs.100861	AA280617	ESTs; Weakly similar to p60 katanin (Hs	4.1
	130555	Hs.116774	AA450324	ESTs	4.1
	105765	Hs.24183	AA343514	ESTs	4.1
5	126529	Hs.26369	AA133237	ESTs	4.1
	125928	Hs.181889	H29730	ESTs	4.1
	117280	Hs.172129	N22107	ESTs; Moderately similar to !!!!! ALU SUB	4.1
	100234	Hs.3085	D29677	KIAA0054 gene product	4.1
	100959	Hs.118127	J00073	actin; alpha; cardiac muscle	4.1
10	107130	Hs.12913	AA620582	ESTs; Weakly similar to (define not ava	4.1
	105035	Hs.8859	AA128486	ESTs	4.1
	126735	Hs.226795	AA808949	glutathione S-transferase pi	4.1
	113056	Hs.8036	T26471	ESTs; Moderately similar to !!!!! ALU SUB	4
	102460	Hs.211582	U48959	Homo sapiens myosin light chain kinase (	4
	106958	Hs.26813	AA504631	ESTs; Weakly similar to (define not ava	4
15	123107	Hs.104207	AA486071	ESTs	4
	127256	Hs.267967	AA327550	ESTs; Weakly similar to !!!!! ALU SUBFAM1	4
	105329	Hs.22862	AA234561	ESTs	4
	115504	Hs.42736	AA291946	ESTs	4
	120726	Hs.97293	AA293656	ESTs	4
20	103576	Hs.94560	Z26317	desmoglein 2	4
	127889	Hs.144941	AI147408	ESTs	4
	106394	Hs.25320	AA447223	ESTs	4
	128046		AA873285	ESTs	4
25	103391	Hs.114366	X94453	pyrroline-5-carboxylate synthetase (glut	4
	106448	Hs.27004	AA449455	ESTs	4
	126513	Hs.86276	W27601	ESTs; Moderately similar to (define not	4
	129593	Hs.98314	AA487015	ESTs; Weakly similar to !!!!! ALU SUBFAM1	3.9
	110151	Hs.31608	H18836	ESTs	3.9
30	105344	Hs.8645	AA235303	ESTs	3.9
	104791	Hs.301871	AA029046	ESTs	3.9
	123442	Hs.111496	AA598803	ESTs	3.9
	127800	Hs.79428	AA521047	BCL2/adenovirus E1B 19kD-interacting pro	3.9
	114555	Hs.167904	AA058594	ESTs	3.9
	122138	Hs.163980	AA435549	ESTs	3.9
35	129565	Hs.198726	X77777	vasoactive intestinal peptide receptor 1	3.9
	103471	Hs.75216	Y00815	protein tyrosine phosphatase; receptor t	3.9
	133908	Hs.325474	M83216	caldesmon 1	3.9
	105635	Hs.301985	AA281508	ESTs	3.9
40	134285	Hs.81086	AA460012	solute carrier family 22 (organic cation	3.9
	134125	Hs.50421	R38102	KIAA0203 gene product	3.9
	125628	Hs.241493	AA418069	natural killer-tumor recognition sequenc	3.9
	103695	Hs.186600	AA018758	ESTs	3.9
	100642	Hs.182183	HG2743-HT3926	Caldesmon 1, Alt. Splice 6, Non-Muscle	3.9
45	104334	Hs.78771	D82614	ESTs	3.9
	110242	Hs.19978	H26417	ESTs	3.9
	125298	Hs.289008	Z39255	ESTs	3.9
	104060	Hs.303193	AA397968	z187a9.r1 Soares_testis_NHT Homo sapiens	3.9
	105823	Hs.293960	AA398197	ESTs	3.9
50	126499	Hs.110445	AA315671	ESTs; Moderately similar to unknown [M.m	3.9
	130752	Hs.18895	D50927	KIAA0137 gene product	3.8
	123494	Hs.112110	AA599786	ESTs	3.8
	104846	Hs.32478	AA040154	ESTs	3.8
	108921	Hs.71721	AA142913	ESTs	3.8
	115506	Hs.45207	AA292537	ESTs	3.8
55	100452	Hs.241552	D87742	Human mRNA for KIAA0268 gene; partial cd	3.8
	104454	Hs.129228	M84443	galactokinase 2	3.8
	108730	Hs.102859	AA126254	ESTs	3.8
	131223	Hs.24427	AA247788	ESTs; Highly similar to (define not ava	3.8
60	104784	Hs.269228	AA027055	ESTs	3.8
	104946	Hs.73848	AA069549	ESTs	3.8
	106932	Hs.9394	AA495926	ESTs	3.8
	101724	Hs.620	M69225	bullous pemphigoid antigen 1 (230/240kD)	3.8
	106140	Hs.14912	AA424524	Homo sapiens mRNA for KIAA0286 gene; par	3.8
65	128135	Hs.269721	AA913491	ESTs	3.8
	120030	Hs.58694	W82051	ESTs	3.8
	126457	Hs.50382	AA007489	zh98g04.r1 Soares_fetal_liver_spleen_1NF	3.8
	123917	Hs.112969	AA621311	EST	3.7
	110714	Hs.17752	H95978	Homo sapiens phosphatidylserine-specific	3.7
	130577	Hs.162	M35410	insulin-like growth factor binding prote	3.7

	117667	Hs.44708	N39214	ser-Thr protein kinase related to the my	3.7
	126104	Hs.39712	N77278	ESTs; Weakly similar to BONE/CARTILAGE P	3.7
	100379	Hs.278721	D82060	Homo sapiens mRNA for membrane protein w	3.7
5	115646	Hs.305971	AA404352	ESTs	3.7
	125792	Hs.193700	A1005388	ESTs; Moderately similar to IIII ALU SUB	3.7
	102162	Hs.1582	U18291	CDC16 (cell division cycle 16; S. cerevi	3.7
	128530	Hs.183475	AA504343	ESTs; Moderately similar to IIII ALU SUB	3.7
	119940	Hs.272531	W86779	EST	3.7
10	110769	Hs.23837	N22222	yw34b06.s1 Morton Fetal Cochlea Homo sap	3.7
	132914	Hs.60293	AA496037	ESTs	3.7
	113594	Hs.15683	T82030	ESTs	3.7
	103702	Hs.279952	AA027793	ESTs; Highly similar to (define not ava	3.7
	130780	Hs.19347	AA248406	ESTs	3.7
15	123288	Hs.291025	AA495836	EST	3.7
	120691	Hs.22380	AA291173	ESTs	3.7
	103153	Hs.75295	X66534	guanylate cyclase 1; soluble; alpha 3	3.7
	129201	Hs.109390	H18989	ESTs	3.7
	114798	Hs.54900	AA159181	ESTs	3.7
20	126801	Hs.7337	AA512802	ESTs	3.7
	105503	Hs.31707	AA256616	ESTs	3.7
	104260	Hs.194283	AF008192	Homo sapiens putative GR6 protein (GR6)	3.7
	125980	Hs.35699	R97219	ESTs	3.7
	123255	Hs.105273	AA490890	ESTs	3.6
25	103862	Hs.6363	AA206625	ESTs	3.6
	100696	Hs.121686	HG3162-HT3339	Transcription Factor Iia	3.6
	134917	Hs.166994	X87241	FAT tumor suppressor (Drosophila) homolo	3.6
	103520		Y10511	H.sapiens mRNA for CD176 protein	3.6
	113778	Hs.302738	W15283	ESTs	3.6
30	101838	Hs.75511	M92934	connective tissue growth factor	3.6
	113702		T97307	ESTs; Moderately similar to IIII ALU SUB	3.6
	118201	Hs.48428	N59800	EST	3.6
	116519	Hs.68554	C20780	EST	3.6
	105886	Hs.22983	AA400517	ESTs; Moderately similar to UDP-GLUCOSE:	3.6
35	106709	Hs.170291	AA464696	ESTs	3.6
	127858	Hs.27973	AA806365	oc26h07.s1 NCI_CGAP_GCB1 Homo sapiens cD	3.6
	101984		S81578	dioxin-responsive gene (putative polyade	3.6
	105508	Hs.326416	AA256680	ESTs	3.6
	116844	Hs.337434	H64938	ESTs	3.6
40	105372	Hs.142296	AA238481	ESTs	3.6
	100745	Hs.144630	HG3510-HT3704	V-Erba Related Ear-3 Protein	3.6
	127521	Hs.184018	AA809982	ESTs	3.6
	110758	Hs.274265	N21385	talin	3.6
	107307	Hs.44155	T52089	creatine kinase; mitochondrial 2 (sarcom	3.6
45	133200	Hs.183639	AA432248	ESTs	3.6
	114774	Hs.184325	AA150043	ESTs	3.6
	120265	Hs.270696	AA173759	ESTs; Moderately similar to IIII ALU SUB	3.6
	134359	Hs.199067	M34309	v-erb-b2 avian erythroblastic leukemia v	3.6
	116250	Hs.44829	AA480975	ESTs; Moderately similar to IIII ALU SUB	3.6
50	106313	Hs.35841	AA436459	nuclear factor I/X (CCAAT-binding transc	3.6
	131898	Hs.279780	N52232	ESTs	3.6
	133444	Hs.73793	M27281	vascular endothelial growth factor	3.6
	128232	Hs.334641	H06296	ESTs	3.6
	135357	Hs.78572	AA235803	ESTs	3.5
55	457951		A1369384	arylsulfatase D	3.5
	108407		AA075519	zm87h9.s1 Stratagene ovarian cancer (#93	3.5
	126659		T16245	a disintegrin and metalloproteinase doma	3.5
	104189	Hs.301804	AA485805	ESTs	3.5
	125956	Hs.129014	N53276	ESTs	3.5
60	103026	Hs.79386	X54162	Human mRNA for a 64 Kd autoantigen expre	3.5
	133011	Hs.171921	AA042890	sama domain; immunoglobulin domain (Ig);	3.5
	131379	Hs.26178	R49035	ESTs	3.5
	126742	Hs.169359	H64106	yr57e06.r1 Soares fetal liver spleen 1NF	3.5
	105560	Hs.306915	AA262783	ESTs	3.5
65	118472	Hs.42179	N68818	ESTs	3.5
	105623	Hs.30127	AA280895	ESTs; Highly similar to IIII ALU SUBFAM1	3.5
	120262	Hs.145807	AA172076	ESTs; Moderately similar to IIII ALU SUB	3.5
	105027	Hs.26771	AA126472	ESTs	3.5
	130760	Hs.18953	AA128997	phosphodiesterase 9A	3.5
	117473	Hs.155560	N30157	ESTs	3.5



	102663	Hs.168075	U70322	karyopherin (importin) beta 2	3.5
	126349	Hs.13531	AA442868	ESTs; Weakly similar to (define not ava	3.5
	132154	Hs.41119	N67179	ESTs	3.5
5	131689	Hs.30696	AA599653	transcription factor-like 5 (basic helix	3.5
	127862	Hs.163191	AA765305	EST	3.5
	126995	Hs.189810	W26950	Human DNA sequence from PAC 388M5 on chr	3.5
	119071		R31180	ESTs	3.5
	103941	Hs.96593	AA282978	ESTs	3.5
10	110721	Hs.31319	H97678	ESTs	3.5
	126586	Hs.43086	AA011247	ESTs	3.5
	103106	Hs.1857	X62025	phosphodiesterase 6G; cGMP-specific; rod	3.5
	116357	Hs.90797	AA504806	Homo sapiens clone 23620 mRNA sequence	3.5
	105309	Hs.4104	AA233790	ESTs	3.5
	130796	Hs.19525	R39390	ESTs	3.5
15	109101	Hs.52184	AA167708	ESTs	3.5
	103134	Hs.2839	X65724	Norrie disease (pseudoglioma)	3.5
	131788	Hs.301449	X86098	adenovirus 5 E1A binding protein	3.5
	118535	Hs.49418	N67968	ESTs	3.5
20	102592	Hs.11223	U62389	Human putative cytosolic NADP-dependent	3.4
	125905	Hs.6456	T69868	chaperonin containing TCP1; subunit 2 (b	3.4
	109160	Hs.301997	AA179387	ESTs	3.4
	105327	Hs.211593	AA234440	ESTs	3.4
	106586	Hs.57787	AA456598	ESTs	3.4
	122635		AA454085	EST	3.4
25	132413	Hs.260116	AA132889	metalloprotease 1 (pitrilysin family)	3.4
	131938	Hs.34956	AA283620	ESTs	3.4
	133871	Hs.182793	AA454597	ESTs	3.4
	107175	Hs.282503	AA621751	ESTs; Weakly similar to KIAA0601 protein	3.4
30	101188	Hs.184288	L20320	cyclin-dependent kinase 7 (homolog of Xe	3.4
	126422	Hs.237658	H48518	ESTs; Highly similar to apolipoprotein A	3.4
	118475		N68845	ESTs; Weakly similar to !!!!! ALU CLASS B	3.4
	104558	Hs.88959	R56678	ESTs; Weakly similar to !!!!! ALU SUBFAM1	3.4
	128307	Hs.132005	AI453794	ESTs	3.4
35	112254	Hs.25829	R51831	ESTs	3.4
	125408	Hs.89578	N72353	yv37e12.r1 Soares fetal liver spleen 1NF	3.4
	109834	Hs.175595	H00604	ESTs	3.4
	130844	Hs.20191	D12122	seven in absentia (Drosophila) homolog 2	3.4
	127143	Hs.20843	AA533553	nj68h04.s1 NCI_CGAP_Pr10 Homo sapiens cD	3.4
40	135309	Hs.42500	D25984	ESTs	3.4
	125724	Hs.285978	AA083407	stimulated trans-acting factor (50 kDa)	3.4
	127692	Hs.187983	AI021912	ESTs	3.4
	116674	Hs.92127	F04816	ESTs	3.4
	134700	Hs.8868	AA481414	golgi SNAP receptor complex member 1	3.4
45	114846	Hs.166186	AA234929	ESTs	3.4
	103649	Hs.155983	Z70219	H.sapiens mRNA for 5'UTR for unknown pro	3.4
	134835	Hs.89925	L04569	calcium channel; voltage-dependent; L ty	3.4
	130568	Hs.16085	AA232535	ESTs; Highly similar to (define not ava	3.4
	111331	Hs.15978	N78773	ESTs	3.4
50	108036	Hs.10653	AA412505	ESTs	3.4
	130987	Hs.21893	R45698	ESTs	3.4
	112814	Hs.35828	R98192	ESTs	3.4
	127815	Hs.255015	AA876009	ob93c10.s1 NCI_CGAP_GCB1 Homo sapiens cD	3.4
	100144	Hs.75616	D13643	KIAA0018 gene product	3.4
55	101129	Hs.247992	L10405	Homo sapiens DNA binding protein for sur	3.4
	130874	Hs.20621	T08287	ESTs	3.4
	106882	Hs.26994	AA489009	ESTs	3.4
	103855	Hs.302267	AA195179	ESTs	3.4
	125957		H45213	yo03b08.r1 Soares adult brain N2b5HB55Y	3.3
60	114048	Hs.146085	W94613	ESTs	3.3
	109826	Hs.75354	F13702	ESTs	3.3
	125355	Hs.170098	R45630	ESTs; Highly similar to KIAA0372 [H.sapi	3.3
	104182	Hs.143792	AA479990	ESTs; Weakly similar to glioma amplified	3.3
	100294	Hs.75454	D49396	Human mRNA for Apo1_Human (MER5(Aop1-Mou	3.3
	131688	Hs.30692	U24153	p21 (CDKN1A)-activated kinase 2	3.3
65	116256	Hs.88201	AA481256	ESTs; Weakly similar to (define not ava	3.3
	102034	Hs.230	U05291	fibromodulin	3.3
	130072	Hs.14658	R99606	Human chromosome 5q13.1 clone 5G8 mRNA	3.3
	114615	Hs.159456	AA083812	ESTs; Highly similar to (define not ava	3.3
	128707	Hs.104105	AA138474	Meis (mouse) homolog 2	3.3

	115048	Hs.190057	AA252668	ESTs	3.3
	125862	Hs.31110	H12084	ESTs	3.3
	135142	Hs.24192	R31679	ESTs	3.3
5	103119	Hs.2877	X63629	cadherin 3; P-cadherin (placental)	3.3
	104460	Hs.62604	M91504	ESTs	3.3
	100365	Hs.79284	D78611	mesoderm specific transcript (mouse) hom	3.3
	131524	Hs.301804	N39162	ESTs	3.3
	102165	Hs.159627	U18321	Death associated protein 3	3.3
10	126966	Hs.182575	R38438	solute carrier family 15 (H+/peptide tra	3.3
	124839	Hs.140942	R55784	ESTs	3.3
	100709	Hs.100469	HG3264-HT3441	At-6 (Gb;U02478)	3.3
	132987	Hs.61635	AA032221	Homo sapiens BAC clone RG041D11 from 7q2	3.3
	102927	Hs.65114	X12876	keratin 18	3.3
15	132616	Hs.283558	AA386264	ESTs	3.3
	125132	Hs.129781	W15495	ESTs	3.3
	111225	Hs.31652	N68989	ESTs	3.3
	114956	Hs.87113	AA243681	ESTs	3.3
	122235	Hs.112227	AA438475	ESTs	3.3
20	112325	Hs.12315	R56055	ESTs	3.3
	123360	Hs.178604	AA504784	ESTs	3.3
	105150	Hs.155995	AA169640	Homo sapiens mRNA for KIAA0843 protein;	3.3
	107391	Hs.284294	W02877	ESTs	3.3
	113058	Hs.7569	T26893	EST	3.3
25	134371	Hs.82318	S69790	Brush-1	3.3
	125669	Hs.333256	R51308	ESTs; Moderately similar to IIII ALU SUB	3.3
	111506	Hs.294105	R07726	ESTs	3.3
	122974	Hs.194215	AA478625	ESTs	3.3
	102369	Hs.299867	U39840	hepatocyte nuclear factor 3; alpha	3.3
30	120408	Hs.190151	AA235045	ESTs	3.3
	117993	Hs.47402	N52039	ESTs; Weakly similar to IIII ALU SUBFAM1	3.3
	129586	Hs.11500	AA437118	ESTs	3.3
	128138	Hs.126494	AI200825	ESTs	3.3
	127265		AA332751	EST37214 Embryo, 8 week I Homo sapiens c	3.3
35	107674	Hs.41143	AA011027	Homo sapiens mRNA for KIAA0581 protein;	3.2
	104866	Hs.293691	AA045342	ESTs	3.2
	103427	Hs.250655	X97303	H.sapiens mRNA for Plg-12 protein	3.2
	132990	Hs.334334	AA458761	ESTs	3.2
	127017	Hs.251946	AA740146	ESTs	3.2
40	132313	Hs.44481	U13220	forkhead (Drosophila)-like 6	3.2
	106880	Hs.32425	AA488889	ESTs	3.2
	107039	Hs.169780	AA599751	homologous to yeast nitrogen permease (c	3.2
	120870	Hs.292581	AA357172	ESTs	3.2
	107920	Hs.284207	AA027951	ESTs	3.2
45	104165	Hs.105116	AA459160	EST	3.2
	107012	Hs.63908	AA588745	ESTs	3.2
	103605	Hs.194657	Z35402	H.sapiens gene encoding E-cadherin, exon	3.2
	124006	Hs.270016	D60302	ESTs	3.2
	101300	Hs.74137	L40391	Homo sapiens (clone s153) mRNA fragment	3.2
50	101183	Hs.795	L19779	H2A histone family; member O	3.2
	125596		R25698	yg44h11.r2 Soares infant brain 1NIB Homo	3.2
	127261		AA661567	nu86bQ2.s1 NCL_CGAP_Alv1 Homo sapiens cD	3.2
	120090	Hs.59554	W94591	ESTs	3.2
	129393	Hs.166982	D13435	phosphatidylinositol glycan; class F	3.2
55	120923	Hs.97129	AA382283	ESTs	3.2
	118907	Hs.274256	N91003	ESTs	3.2
	111552	Hs.191185	R09411	ESTs	3.2
	104431	Hs.99913	J03019	adrenergic; beta-1-; receptor	3.2
	133551	Hs.278634	D63480	Human mRNA for KIAA0146 gene; partial cd	3.2
60	131615	Hs.192803	D14533	xeroderma pigmentosum; complementation g	3.2
	126547	Hs.84072	U47732	transmembrane 4 superfamily member 3	3.2
	103172	Hs.116774	X68742	Integrin; alpha 1	3.2
	113887	Hs.24095	W68845	ESTs	3.2
	133323	Hs.70837	Z83735	H3 histone family; member K	3.2
65	111597	Hs.189716	R11499	ESTs	3.2
	121515	Hs.104696	AA412133	ESTs	3.2
	107445	Hs.6639	W28406	ESTs	3.2
	106887	Hs.334335	AA489091	ESTs	3.2
	123052	Hs.185766	AA481806	ESTs	3.2
	107072	Hs.130760	AA609113	Homo sapiens mRNA; cDNA DKFZp586N0318 (f	3.2

	102214	Hs.32864	U23752	SRY (sex-determining region Y)-box 11	3.2
	123147		AA487961	ab11h6.s1 Stratagene lung (#93721) Homo	3.2
	125435	Hs.272138	R00940	ye87g03.r1 Soares fetal liver spleen 1NF	3.2
5	116246	Hs.250646	AA479961	ESTs; Highly similar to ubiquitin-conjug	3.2
	105169	Hs.180789	AA180321	Homo sapiens (clone S164) mRNA; 3' end o	3.2
	134001	Hs.78344	AF001548	myosin; heavy polypeptide 11; smooth mus	3.2
	124866	Hs.304389	R68571	ESTs	3.2
	133205	Hs.67619	AA089559	Homo sapiens mRNA; chromosome 1 specific	3.2
10	102998	Hs.182378	X17648	colony stimulating factor 1 (macrophage)	3.2
	101232	Hs.242884	L28997	ADP-ribosylation factor-like 1	3.1
	132906	Hs.234896	AA142857	ESTs; Highly similar to geminin [H.sapie	3.1
	104281	Hs.5669	C14290	ESTs	3.1
	123926	Hs.227933	AA621348	ESTs; Highly similar to (dafline not ava	3.1
	134464	Hs.239720	N79354	ESTs; Weakly similar to Pga [D.melanogas	3.1
15	105322	Hs.16348	AA234100	ESTs	3.1
	100831	Hs.48332	HG2709-HT2805	Serine/Threonine Kinase (Gb:225431)	3.1
	130791	Hs.189263	AA259102	ESTs; Highly similar to (dafline not ava	3.1
	131220	Hs.300855	R77200	ESTs	3.1
	113237	Hs.123642	T62857	ESTs	3.1
20	125562	Hs.98968	AA494372	ESTs	3.1
	134110	Hs.79136	U41060	Human breast cancer; estrogen regulated	3.1
	132393	Hs.47334	W85888	ESTs; Moderately similar to !!!! ALU SUB	3.1
	107439	Hs.296842	W27995	ESTs; Moderately similar to non-muscle m	3.1
	125863	Hs.40719	AA299096	Homo sapiens mRNA; cDNA DKFZp564M0916 (f	3.1
25	105811	Hs.286182	AA394121	ESTs	3.1
	129284	Hs.296141	AA104023	ESTs	3.1
	125321	Hs.178294	T86652	ESTs	3.1
	107332	Hs.183297	T87750	ESTs	3.1
	123570	Hs.109653	AA608955	ESTs	3.1
30	100384	Hs.90800	D83646	matrix metalloproteinase 16 (membrane-in	3.1
	109063	Hs.38972	AA161043	tetraspan 1	3.1
	133284	Hs.182828	U09367	zinc finger protein 136 (clone pHZ-20)	3.1
	131839	Hs.33010	H80622	Homo sapiens mRNA for KIAA0633 protein;	3.1
	117606	Hs.44698	N35115	ESTs	3.1
35	418998	Hs.287849	F13215	ESTs	3.1
	125180	Hs.103120	W58344	ESTs	3.1
	100789		HG3893-HT4163	Phosphoglucosylase 1, Alt. Splice	3.1
	126017	Hs.159440	H60487	ESTs	3.1
40	132452	Hs.247324	AA005262	Homo sapiens DNA sequence from PAC 262D1	3.1
	129077	Hs.108479	H78886	ESTs	3.1
	126563	Hs.181368	W26247	U5 snRNP-specific protein (220 kD); orth	3.1
	129650	Hs.118258	N52554	ESTs	3.1
	123465		AA599033	ESTs	3.1
45	126486	Hs.152316	AA345339	EST51345 Gall bladder II Homo sapiens cD	3.1
	128460	Hs.167031	W01616	za36d05.r1 Soares fetal liver spleen 1NF	3.1
	118697	Hs.43234	N72094	ESTs	3.1
	103860	Hs.38057	AA203742	ESTs	3.1
	127968	Hs.124347	AA971439	ESTs	3.1
	124984	Hs.223241	T47566	yb15c11.s1 Stratagene placenta (#937225)	3.1
50	103903	Hs.15220	AA249334	j312.seq.F Human fetal heart, Lambda ZAP	3.1
	106697	Hs.22242	AA463737	ESTs	3.1
	130892	Hs.20993	AA442604	ESTs; Weakly similar to Ydr374cp [S.cere	3
	114032	Hs.35014	W92779	ESTs	3
	128835	Hs.106390	W15528	ESTs	3
55	103667	Hs.247815	Z80788	H.sapiens H4I gene	3
	126264	Hs.250614	N42897	yy13h06.r1 Soares melanocyte 2NbHM Homo	3
	132626	Hs.21275	D25755	ESTs	3
	131107	Hs.75354	N87590	ESTs	3
	126780	Hs.5811	R12421	ESTs	3
60	127363	Hs.22116	AA307744	Homo sapiens Cdc14B1 phosphatase mRNA; c	3
	103690	Hs.84063	AA016186	ESTs	3
	102589	Hs.8867	U62015	Homo sapiens Cyr61 mRNA, complete cds	3
	125144	Hs.24338	W37999	ESTs	3
	132977	Hs.301404	U28686	RNA binding motif protein 3	3
65	120714	Hs.146170	AA292689	ESTs	3
	101038	Hs.79411	J05249	replication protein A2 (32kD)	3
	102856	Hs.248177	X00090	Human histone H3 gene	3
	105516	Hs.30738	AA257971	ESTs	3
	131137	Hs.33287	U85193	nuclear factor I/B	3

	127221	Hs.241551	AI354332	ESTs	3
	411888	Hs.24104	R26708	ESTs	3
	131684	Hs.3068	U26174	granzyme K (serine protease; granzyme 3;	3
	100629	Hs.21291	HG2706-HT2802	Serine/Threonine Kinase (Gb:Z25428)	3
5	119944	Hs.58915	W86838	EST	3
	113801	Hs.118281	W38418	zinc finger protein 266	3
	133780	Hs.76152	M14218	decorin	3
	104690	Hs.14449	AA010889	ESTs	3
	126371	Hs.304139	N57645	EST	3
10	127635	Hs.116346	AA766903	ESTs	3
	128434	Hs.143880	AI190914	ESTs	3
	435761	Hs.187555	AA701941	ESTs	3
	125025	Hs.50748	T71561	ESTs	3
	124940	Hs.103804	R99599	heterogeneous nuclear ribonucleoprotein	3
15	128742	Hs.251531	D00763	proteasome (prosome; macropain) subunit;	3
	107147	Hs.10450	AA621125	Homo sapiens chromosome 2; 10 repeat reg	3
	112068	Hs.22545	R43910	ESTs	3
	105346	Hs.263727	AA235465	ESTs; Moderately similar to IIII ALU SUB	3
	130972	Hs.21739	AA370302	Homo sapiens mRNA; cDNA DKFZp586I1518 (f	3
20	131230	Hs.274407	AA149987	thymus specific serine peptidase	3
	133743	Hs.75847	N79435	ESTs	3
	127402	Hs.227949	AA358869	ESTs; Highly similar to SEC13-RELATED PR	3
	117483	Hs.44189	N30426	ESTs	3
	123659	Hs.112699	AA608368	ESTs	3
25	103963	Hs.63290	AA298588	EST114219 HSC172 cells II Homo sapiens c	3
	103785	Hs.7367	AA112222	ESTs; Moderately similar to (define not	3
	115092	Hs.80975	AA255903	CD39-like 4	2.9
	134831	Hs.89890	S72370	pyruvate carboxylase	2.9
	128579	Hs.101810	AA093378	ESTs; Weakly similar to IIII ALU SUBFAM1	2.9
30	134193	Hs.7980	F09570	ESTs	2.9
	123522	Hs.112575	AA608577	ESTs	2.9
	107109	Hs.32793	AA609943	ESTs	2.9
	134694	Hs.88556	D50405	histone deacetylase 1	2.9
	134399	Hs.82689	H99801	tumor rejection antigen (gp96) 1	2.9
35	134632	Hs.174139	AA398710	H. sapiens RNA for CLCN3	2.9
	106683	Hs.14512	AA461495	ESTs	2.9
	108555		AA084963	zn13e12.s1 Stratagene hNT neuron (#93723	2.9
	100953	Hs.2110	HG945-HT945	Nucleic Acid-Binding Protein (Gb:L12693)	2.9
	130597	Hs.16492	AA173998	ESTs; Weakly similar to weakly similar t	2.9
40	101813	Hs.139226	M87338	replication factor C (activator 1) 2 (40	2.9
	106638	Hs.288	AA459950	ESTs	2.9
	129109	Hs.108708	AA491295	calcium/calmodulin-dependent protein kin	2.9
	125819	Hs.251871	AA044840	stromal cell-derived factor 1	2.9
	106282	Hs.9857	AA433946	ESTs; Weakly similar to (define not ava	2.9
45	100386	Hs.301636	D83703	peroxisomal biogenesis factor 6	2.9
	114546	Hs.98074	AA056263	ESTs; Moderately similar to IIII ALU SUB	2.9
	105914	Hs.9701	AA402224	Homo sapiens growth arrest and DNA-damag	2.9
	108552		AA084912	zn11c7.s1 Stratagene hNT neuron (#937233	2.9
50	126505	Hs.180057	W26894	16a11 Human retina cDNA randomly primed	2.9
	134098	Hs.79086	X06323	Human MRL3 mRNA for ribosomal protein L3	2.9
	129721	Hs.211539	L19161	eukaryotic translation initiation factor	2.9
	100076	Hs.277422	AB000897	Homo sapiens mRNA for cadherin FIB3, par	2.9
	117466	Hs.44104	N29862	ESTs	2.9
	106335	Hs.36888	AA437258	ESTs; Moderately similar to WAP four-dis	2.9
55	134510	Hs.250870	U25265	protein kinase; mitogen-activated; kinas	2.9
	105835	Hs.32995	AA398412	ESTs	2.9
	106611	Hs.26267	AA458904	ESTs; Weakly similar to torsinA [H.sapie	2.9
	134087	Hs.173824	U51166	thymine-DNA glycosylase	2.9
	100641	Hs.182183	HG2743-HT2846	Caldesmon 1, Alt. Splice 4, Non-Muscle	2.9
60	104602		R86920	ESTs	2.9
	117203	Hs.42738	H99789	ESTs	2.9
	131889	Hs.34073	AA401912	BH-protocadherin (brain-heart)	2.9
	101707	Hs.155212	M65131	methylmalonyl Coenzyme A mutase	2.9
	115271	Hs.5724	AA279422	ESTs	2.9
65	125812	Hs.287912	H73420	lectin; mannose-binding; 1	2.9
	110740	Hs.19762	H99675	ESTs	2.9
	103406	Hs.285728	X95677	H.sapiens mRNA for ArgBP1B protein	2.9
	104577	Hs.132390	R71539	ESTs	2.9
	102772	Hs.161002	U83115	absent in melanoma 1	2.9

	131710	Hs.30985	AA233225	ESTs; Highly similar to (define not ava	2.9
	125231	Hs.268903	W84714	ESTs	2.9
	127390	Hs.15535	A1417137	Homo sapiens clone 24582 mRNA sequence	2.9
5	104229	Hs.61289	AB002346	inositol phosphate 5'-phosphatase 2 (syn	2.9
	126900	Hs.191385	AA699949	ESTs	2.9
	125175	Hs.303030	W52355	EST	2.9
	103849	Hs.34578	AA187045	ESTs; Weakly similar to IIII ALU SUBFAM1	2.9
	102126	Hs.78961	U14575	protein phosphatase 1; regulatory (inhib	2.9
10	124906	Hs.107815	R87647	ESTs	2.9
	131148	Hs.303125	C00038	ESTs	2.9
	123158	Hs.218329	AA488658	heat shock 70kD protein 1	2.9
	133687	Hs.75462	U72649	Human BTG2 (BTG2) mRNA; complete cds	2.9
	105182	Hs.18271	AA191014	ESTs; Weakly similar to Ydr372cp [S.cere	2.9
15	133968	Hs.232068	D15050	Human mRNA for transcription factor AREB	2.9
	117425	Hs.336901	N27154	ESTs	2.9
	111087	Hs.37637	N59845	ESTs	2.9
	129641	Hs.11805	N66066	ESTs	2.9
	128639	Hs.102937	N91246	ESTs	2.9
20	133209	Hs.79265	AA114183	ESTs; Moderately similar to glutamate py	2.9
	135154	Hs.267812	AA126433	sorting nexin 4	2.9
	126838	Hs.279509	AA858097	pigment epithelium-derived factor	2.9
	103803	Hs.108149	AA127896	ESTs	2.9
	102139	Hs.2128	U15932	dual specificity phosphatase 5	2.9
25	128104		AA971000	op87g11.s1 Soares_NFL_T_GBC_S1 Homo sapi	2.8
	127834	Hs.337631	AA761415	nz22d08.s1 NCL_CGAP_GCB1 Homo sapiens cD	2.8
	133101	Hs.180952	AA488230	ESTs	2.8
	127250	Hs.217916	AI023717	ESTs	2.8
	135063	Hs.93883	D10537	myelin protein zero (Charcot-Marie-Tooth	2.8
30	126323	Hs.68644	N45014	yy80g06.r1 Soares_multiple_sclerosis_2Nb	2.8
	121873	Hs.145696	AA426270	ESTs	2.8
	122090	Hs.98684	AA432141	ESTs	2.8
	118728	Hs.322645	N73705	ESTs	2.8
	135400	Hs.99815	M23263	androgen receptor (dihydrotestosterone r	2.8
35	125278	Hs.129998	W93523	ESTs	2.8
	124387	Hs.109019	N27637	ESTs	2.8
	124803	Hs.12186	R45480	cyclin K	2.8
	H45968	Hs.32149	H45968	ESTs	2.8
	104261	Hs.5409	AF008442	RNA polymerase I subunit	2.8
40	105366	Hs.282093	AA236356	ESTs	2.8
	106070	Hs.5957	AA417761	Homo sapiens clone 24416 mRNA sequence	2.8
	131356	Hs.25960	M13241	v-myc avian myelocytomatosis viral relat	2.8
	112009	Hs.26255	R42714	EST	2.8
	133199	Hs.250175	AA609773	Homo sapiens clone 23904 mRNA sequence	2.8
	110379	Hs.33130	H44825	ESTs	2.8
45	103890	Hs.72085	AA236843	ESTs; Weakly similar to unknown [S.cerev	2.8
	128152		R20353	yg20f10.r1 Soares infant brain 1N1B Homo	2.8
	107008	Hs.23740	AA598710	ESTs	2.8
	135243	Hs.97101	AA215333	ESTs	2.8
50	103058	Hs.184510	X57348	stratifin	2.8
	132020	Hs.293845	AA428990	ESTs	2.8
	116354	Hs.292566	AA504262	ESTs	2.8
	125867	Hs.12372	H98141	ESTs	2.8
	120603	Hs.98541	AA282787	ESTs; Highly similar to (define not ava	2.8
55	115119	Hs.46847	AA256524	Human DNA sequence from clone 30M3 on ch	2.8
	133865	Hs.170290	F09315	discs; large (Drosophila) homolog 5	2.8
	109415	Hs.110826	AA227219	Homo sapiens CAGF9 mRNA; partial cds	2.8
	128687	Hs.23767	Z38910	ESTs	2.8
	109984	Hs.10299	H09594	ESTs; Moderately similar to IIII ALU SUB	2.8
	133179	Hs.66731	U81599	homeo box B13	2.8
60	115998	Hs.336629	AA448488	ESTs; Weakly similar to zinc finger prot	2.8
	112180	Hs.25067	R49116	EST	2.8
	120428	Hs.173694	AA236822	ESTs; Moderately similar to (define not	2.8
	106241	Hs.6019	AA430108	ESTs	2.8
	131060	Hs.22564	AA160890	myosin VI	2.8
65	111383	Hs.40919	N94527	ESTs	2.8
	102123	Hs.1594	U14518	centromere protein A (17kD)	2.8
	102722	Hs.79981	U79242	Human clone 23560 mRNA sequence	2.8
	126887	Hs.274324	W92041	PCAF associated factor 65 alpha	2.8
	126663	Hs.181297	AA714635	ESTs	2.8

	104387	Hs.134342	H17438	ESTs; Weakly similar to sevanttransmembra	2.8
	107316	Hs.193700	T63174	ESTs; Moderately similar to HIII ALU SUB	2.8
	128059	Hs.145096	AA972446	ESTs	2.8
	124447		N48000	ESTs	2.8
5	111398	Hs.125565	R00086	deafness; X-linked 1; progressive	2.8
	134085	Hs.79018	U20979	chromatin assembly factor I (150 kDa)	2.8
	124788	Hs.100912	R43543	ESTs	2.8
	112248	Hs.326416	R51361	ESTs	2.8
	121309	Hs.97312	AA402482	ESTs	2.8
10	103076	Hs.75319	X59818	ribonucleotide reductase M2 polypeptide	2.8
	107071	Hs.35198	AA609053	ESTs	2.8
	104425	Hs.35380	H88496	ESTs	2.8
	132991	Hs.62245	AA446906	solute carrier family 25 (mitochondrial	2.8
	104968	Hs.29669	AA084602	ESTs	2.8
15	121153	Hs.97694	AA399640	ESTs	2.8
	131216	Hs.243901	D31058	ESTs	2.8
	109682	Hs.22869	F09299	ESTs	2.8
	131930	Hs.168818	H77734	ESTs; Moderately similar to roundabout 1	2.8
	132027	Hs.181444	N78844	ESTs; Weakly similar to R12C12.6 [C.eleg	2.8
20	127383	Hs.180478	AA447990	ESTs	2.8
	132598	Hs.530	M81379	collagen; type IV; alpha 3 (Goodpasture	2.8
	101121	Hs.1313	L09753	tumor necrosis factor (ligand) superfamI	2.8
	123000	Hs.105640	AA479347	ESTs	2.8
	121329	Hs.1755	AA404324	ESTs	2.8
25	100481	Hs.121489	HG1098-HT1098	Cystatin D	2.7
	113803	Hs.283683	W42789	ESTs	2.7
	110934	Hs.169001	N48708	ESTs; Weakly similar to cytochrome P-450	2.7
	432888		T86823	ESTs	2.7
	121802	Hs.188898	AA424328	ESTs	2.7
30	130396	Hs.155313	AB002331	Human mRNA for KIAA0333 gene; partial cd	2.7
	121103	Hs.97697	AA398936	ESTs; Weakly similar to (define not ava	2.7
	131129	Hs.23240	R27296	ESTs	2.7
	130943	Hs.272429	D50855	calcium-sensing receptor (hypocalciuric	2.7
	134676	Hs.87819	W28051	ESTs; Weakly similar to keratin 9; cytos	2.7
35	111800	Hs.25318	R39044	ESTs	2.7
	106025	Hs.173334	AA412063	ESTs	2.7
	126144	Hs.40639	N39696	yx92a07.r1 Soares melanocyte 2NbHM Homo	2.7
	103248	Hs.75262	X77383	cathepsin O	2.7
	127230	Hs.274170	H30501	Homo sapiens Opa-interacting protein OIP	2.7
40	101584	Hs.84072	M35252	transmembrane 4 superfamily member 3	2.7
	124131	Hs.167489	H19980	ESTs	2.7
	129689	Hs.77873	AA130156	ESTs	2.7
	132892	Hs.9973	W92797	ESTs	2.7
	120827	Hs.132867	AA347717	ESTs	2.7
45	134579	Hs.85963	N23222	ESTs; Moderately similar to HIII ALU SUB	2.7
	106149	Hs.256301	AA424881	ESTs	2.7
	132037	Hs.332541	AA203649	ESTs; Weakly similar to HEM45 [H.sapiens	2.7
	130542	Hs.179825	U64675	Human sperm membrane protein BS-63 mRNA,	2.7
	122851	Hs.99598	AA463627	ESTs	2.7
50	134983	Hs.186384	D28235	prostaglandin-endoperoxide synthase 2 (p	2.7
	120537	Hs.160422	AA262790	ESTs	2.7
	131036	Hs.174140	X64330	ATP citrate lyase	2.7
	133689	Hs.211582	AA099391	ESTs	2.7
	128847	Hs.106529	AA424199	zv81e01.r1 Soares_total_fetus_Nb2HF8_9w	2.7
55	112755	Hs.306044	R93802	ESTs	2.7
	423239		AA323591	EST26392 Cerebellum II Homo sapiens cDNA	2.7
	105031	Hs.12321	AA127240	ESTs	2.7
	126021	Hs.187516	AA775894	ESTs	2.7
	102116		U13706	Human ELAV-like neuronal protein 1 isofo	2.7
60	133394	Hs.237225	R18759	ESTs; Weakly similar to (define not ava	2.7
	104267	Hs.278439	C00358	ESTs	2.7
	107614	Hs.40241	AA004878	ESTs; Highly similar to (define not ava	2.7
	129809	Hs.1259	X55283	asialoglycoprotein receptor 2	2.7
	112109	Hs.283309	R45221	ESTs; Weakly similar to HIII ALU SUBFAM	2.7
65	128422		T85681	yd60c06.r1 Soares fetal liver spleen 1NF	2.7
	109494	Hs.43899	AA233702	ESTs	2.7
	118696	Hs.292284	N72086	Homo sapiens RNA polymerase III largest	2.7
	106053	Hs.35727	AA416963	ESTs; Highly similar to histone H2A [H.s	2.7
	104440	Hs.284380	L20492	gamma-glutamyltransferase 1	2.7

	129426	Hs.111323	AA412087	EST; Highly similar to (define not ava	2.7
	123798		AA620411	small inducible cytokine A5 (RANTES)	2.7
	106716	Hs.238928	AA464962	ESTs	2.7
5	103663		Z78291	Z78291 Homo sapiens brain fetus Homo sap	2.7
	114162	Hs.22265	Z38909	ESTs	2.7
	113063	Hs.5027	T32438	ESTs	2.7
	127897		AA773857	af80c09.r1 Soares_NhHMPu_S1 Homo sapiens	2.7
	130621	Hs.16803	AA621718	ESTs; Weakly similar to (define not ava	2.7
	116245	Hs.42796	AA479958	ESTs; Highly similar to (define not ava	2.7
10	125499		R11878	y149d11.r1 Soares infant brain 1N1B Homo	2.7
	133960	Hs.77899	M19267	tropomyosin 1 (alpha)	2.7
	104470	Hs.246358	N28843	ESTs; Weakly similar to Similar to colla	2.7
	134982	Hs.92308	N46088	ESTs	2.7
	106803	Hs.284295	AA479114	ESTs	2.7
15	104899	Hs.285574	AA054726	ESTs	2.7
	125401	Hs.337585	A1204637	ESTs; Moderately similar to KIAA0350 [H.	2.7
	111253	Hs.15768	N70042	ESTs; Moderately similar to [!!!] ALU SUB	2.7
	118449	Hs.164478	N68413	ESTs; Weakly similar to (define not ava	2.7
	134507	Hs.84318	M63488	replication protein A1 (70kD)	2.7
20	121609	Hs.98185	AA416867	EST	2.7
	113835	Hs.27475	W56590	ESTs	2.7
	113962	Hs.285290	W86375	ESTs; Highly similar to (define not ava	2.7
	121913	Hs.98558	AA428062	ESTs	2.7
	108194	Hs.216717	AA057250	ESTs	2.7
25	130799	Hs.12696	AA464273	ESTs	2.7
	123184	Hs.18166	AA489072	Homo sapiens mRNA for KIAA0870 protein;	2.7
	103420	Hs.173497	X97065	SEC23-like protein B	2.7
	106186	Hs.6315	AA427398	acetylserotonin N-methyltransferase-like	2.7
	101349		L77559	Homo sapiens DGS-B partial mRNA	2.7
30	112954	Hs.6655	T16559	ESTs	2.7
	133054	Hs.291079	R07876	ESTs; Weakly similar to unknown [S.cerev	2.7
	128131	Hs.25640	A1283162	claudin 3	2.6
	101864	Hs.75777	M95787	transgelin	2.6
	111948	Hs.26303	R40752	ESTs	2.6
35	130145	Hs.151051	U07620	protein kinase mitogen-activated 10 (MAP	2.6
	126507	Hs.23984	A1362218	ESTs	2.6
	117903	Hs.47111	N50740	ESTs	2.6
	116345	Hs.199067	AA495981	ESTs	2.6
	132227	Hs.4248	AA412620	ESTs	2.6
40	125746	Hs.274256	H03574	y142b08.r1 Soares placenta Nb2HP Homo sa	2.6
	105073	Hs.89463	AA137034	ESTs	2.6
	102764		U82310	Homo sapiens unknown protein mRNA, parti	2.6
	131367	Hs.173933	AA456687	ESTs	2.6
	130792	Hs.19500	AA307896	nuclear localization signal deleted in v	2.6
45	107427	Hs.46736	W26975	ESTs	2.6
	117477	Hs.44175	N30328	ESTs	2.6
	106290	Hs.16364	AA435542	ESTs	2.6
	126829	Hs.7910	R11547	ESTs	2.6
	118836	Hs.173001	N79820	ESTs	2.6
50	100147	Hs.136348	D13686	osteoblast specific factor 2 (fasciclin	2.6
	104278	Hs.109253	C02582	ESTs; Highly similar to (define not ava	2.6
	135051	Hs.83484	C15324	ESTs	2.6
	126081	Hs.227835	A1346024	collagen; type I; alpha 1	2.6
	123579		AA608983	af5d4.s1 Soares_testis_NHT Homo sapiens	2.6
55	130115	Hs.149923	M31627	X-box binding protein 1	2.6
	101434	Hs.1430	M20218	coagulation factor XI (plasma thrombopla	2.6
	122962	Hs.104720	AA478429	ESTs; Moderately similar to [!!!] ALU SUB	2.6
	126151	Hs.40808	AA324743	ESTs	2.6
	128925	Hs.21851	D61676	Homo sapiens mRNA; cDNA DKFZp586J2118 (f	2.6
60	128919	Hs.103391	L27559	insulin-like growth factor binding prote	2.6
	130296	Hs.154103	R09286	LIM protein (similar to rat protein kina	2.6
	128402	Hs.191637	AA457244	ESTs	2.6
	129273	Hs.109968	W63783	ESTs	2.6
	125483	Hs.7788	F07759	ESTs	2.6
65	132953	Hs.321264	AA029927	ESTs	2.6
	130963	Hs.21639	U57099	nuclear protein; marker for differentiat	2.6
	120614	Hs.194154	AA284281	ESTs; Weakly similar to [!!!] ALU SUBFAMI	2.6
	123251	Hs.103267	AA490858	ESTs; Moderately similar to Rabin3 [R.no	2.6
	121710	Hs.96744	AA419011	ESTs	2.6

	125428	Hs.851	W74608	ESTs; Highly similar to (define not ava	2.6
	115906	Hs.82302	AA436616	ESTs	2.6
	108432		AA076626	Homo sapiens clone 23851 mRNA sequence	2.6
5	126191	Hs.191911	H97728	ESTs	2.6
	106164	Hs.281434	AA425773	ESTs	2.6
	111519	Hs.268615	R08165	ESTs	2.6
	134590	Hs.173840	W58612	ESTs	2.6
	102565		U59748	Human desert hedgehog (hDHH) mRNA, parti	2.6
10	129879	Hs.13109	AA194973	ESTs	2.6
	114264	Hs.334609	Z40074	ESTs	2.6
	106236	Hs.21104	AA429951	ESTs	2.6
	135192	Hs.321709	AF000234	purinergic receptor P2X; ligand-gated io	2.6
	109833	Hs.29889	H00580	ESTs	2.6
15	105756	Hs.8535	AA303088	ESTs; Weakly similar to transformation-r	2.6
	121422	Hs.97967	AA406210	ESTs	2.6
	130417	Hs.155485	U58522	Human huntingtin interacting protein (Hl	2.6
	124312	Hs.102329	H94847	ESTs	2.6
	108998	Hs.97199	AA156058	ESTs	2.6
20	127081	Hs.180591	R88362	ESTs; Weakly similar to weak similarity	2.6
	128574	Hs.11463	AA458603	ESTs; Weakly similar to (define not ava	2.6
	112410	Hs.26904	R61680	ESTs	2.6
	123929	Hs.112981	AA621364	ESTs	2.6
	122905	Hs.104835	AA470070	ESTs	2.6
25	116399	Hs.110637	AA599729	Homo sapiens homeobox protein A10 (HOXA1	2.6
	130279	Hs.153934	AA424044	core-binding factor; runt domain; alpha	2.6
	130021	Hs.1435	M24470	guanosine monophosphate reductase	2.6
	100585	Hs.199160	HG2367-HT2463	Trithorax Homolog Hrx	2.6
	104965	Hs.30177	AA084104	ESTs	2.6
30	117711	Hs.46485	N45201	EST	2.6
	124782	Hs.48712	R44357	ESTs	2.6
	111299	Hs.74313	N73808	ESTs	2.6
	103616	Hs.32971	Z46973	phosphoinositide-3-kinase; class 3	2.6
	133629	Hs.195614	D13642	KIAA0017 gene product	2.6
35	126484	Hs.169977	AJ086782	ESTs	2.6
	100858		HG4245-HT4515	Forkhead Family Afx1	2.6
	133547	Hs.301927	X02883	T-cell receptor; alpha (V;D;J;C)	2.6
	126680	Hs.133855	F07097	ESTs	2.6
	125739	Hs.92137	AA428557	v-myc avian myelocytomatosis viral oncog	2.6
40	102276	Hs.10247	U30999	Human (memc) mRNA, 3'UTR	2.6
	105586	Hs.191538	AA279137	ESTs	2.6
	103978	Hs.34136	AA307443	ESTs	2.6
	125054	Hs.268601	T80622	ESTs; Weakly similar to (define not ava	2.6
	114212	Hs.21201	Z39338	ESTs; Highly similar to (define not ava	2.6
45	116959	Hs.40022	H79310	EST	2.6
	109228	Hs.306995	AA193366	ESTs	2.6
	133989	Hs.78202	U29175	SWI/SNF related; matrix associated; acti	2.6
	100640	Hs.182183	HG2743-HT2845	Caldesmon 1, Alt. Splice 3, Non-Muscle	2.6
	133093	Hs.285996	AA598749	ESTs	2.6
50	114306	Hs.6540	Z40861	ESTs	2.6
	106060	Hs.171391	AA417287	C-terminal binding protein 2	2.5
	107748	Hs.80772	AA017258	EST	2.5
	100134	Hs.49	D13264	macrophage scavenger receptor 1	2.5
	133969	Hs.78	U13044	GA-binding protein transcription factor;	2.5
55	130992	Hs.74316	AA455001	ESTs	2.5
	127493	Hs.291701	AA808081	oc39a08.s1 NCL_CGAP_GCB1 Homo sapiens cD	2.5
	132869	Hs.203961	N26855	ESTs	2.5
	117570	Hs.44583	N34415	EST	2.5
	124644	Hs.109654	N91279	ESTs	2.5
60	103558	Hs.2785	Z19574	keratin 17	2.5
	132883	Hs.5897	AA047151	ESTs	2.5
	102009	Hs.82643	U02680	protein tyrosine kinase 9	2.5
	116058	Hs.20159	AA454156	ESTs	2.5
	121989	Hs.193784	AA430044	ESTs	2.5
	131257	Hs.24808	AA256042	ESTs	2.5
65	100320	Hs.75275	D50916	homolog of yeast (S. cerevisiae) uid2	2.5
	102959	Hs.121524	X15722	glutathione reductase	2.5
	132969	Hs.6166	AA047818	ESTs	2.5
	130869	Hs.2057	AA128100	uridine monophosphate synthetase (orotat	2.5
	129645	Hs.118131	L38928	5;10-methylenetetrahydrofolate synthetase	2.5



	126399	Hs.83883	AA128075	z16d08.r1 Soares_pregnant_uterus_NbHPU	2.5
	134069	Hs.78935	U29607	Homo sapiens eIF-2-associated p67 homolo	2.5
	109816	Hs.61960	F11013	ESTs; Weakly similar to KIAA0176 [H.sapi]	2.5
	134801	Hs.89695	X02160	insulin receptor	2.5
5	104232	Hs.10587	AB002351	Human mRNA for KIAA0353 gene; partial cd	2.5
	107381	Hs.159486	U72513	Human RPL13-2 pseudogene mRNA; complete	2.5
	106057	Hs.289074	AA417067	ESTs	2.5
	134252	Hs.80720	AA031782	Homo sapiens mRNA; cDNA DKFZp586B1722 (f	2.5
	128062	Hs.105547	AA379500	ESTs	2.5
10	110009	Hs.6614	H10933	ESTs	2.5
	111375	Hs.20432	N93696	ESTs	2.5
	122642	Hs.99361	AA454186	ESTs	2.5
	127999	Hs.69851	AA837495	ESTs; Weakly similar to Wiskott-Aldrich	2.5
	105029	Hs.13268	AA126855	ESTs	2.5
15	105082	Hs.26765	AA143763	ESTs; Weakly similar to Similarity to S.	2.5

**TABLE 1A** show the accession numbers for those primekeys lacking unigeneID's for Table 1. For each probeset we have listed the gene cluster number from which the oligonucleotides were designed. Gene clusters were compiled using sequences derived from Genbank ESTs and mRNAs. These sequences were clustered based on sequence similarity using Clustering and Alignment Tools (DoubleTwist, Oakland California). The Genbank accession numbers for sequences comprising each cluster are listed in the "Accession" column.

Pkey:	Unique Eos probeset Identifier number	
	CAT number:	Gene cluster number
Accession:	Genbank accession numbers	
Pkey	CAT number	Accessions
108562	111555_1	AA071210 AA069899 AA071438 AA084912 AA084803 AA079371 AA079370
126023	1596090_1	H57661 H58881
126086	1608216_1	H75681 H70975
102565	32479_1	AB010994 U59748 AA064660
101964	48158_7	S81578
125499	1562851_1	H10543 R11878
125596	1708455_1	R25698 R56582 R56018
118417	37186_1	AF080229 AF080231 AF080230 AF080232 AF080233 AF080234 BE550833 AI636743 AW614951 BE467547 AI680833 AI633818 N29986 U87592 U87593 U87590 U87591 S48404 U87587 AA463992 AW206802 AI970376 AI583718 AI672574 N25695 AW665466 AJ818326 AA126128 AJ480345 AW013827 AA248638 AI214968 AA204735 AA207155 AA206262 AA204833 AW003247 AW496808 AJ080480 AI631703 AI651023 AI687418 AW818140 AA502500 AI206189 AI671282 AI352545 BE501030 AI652535 BE465762 AA206331 AW451866 AA471088 AA206342 AA204834 AA206100 AW021661 AA332922 N68048 AA703396 H92278 AW139734 H92683 U87589 U87595 H69001 U87594 BE466420 AI624817 BE466611 AI206344 AA574397 AA348354 AI493192
125661	327827_1	AA491830 R50173 R55192 R50320 AI732306 AI732305 AI820727 AI820728 R55191 R50319 R50227
125957	1583542_1	H41694 H45213
125982	1766315_1	R88091 W82998
127248	227560_1	AA384195 AA325029 AW982050
103731	112052_1	AA070545 AA131490 AA131373
127261	231687_1	AA330501 AA661567
127265	232391_1	AA331503 AA332751 AW982542
126659	1541209_1	T16245 R19694 F13545 H10299 T66048 T65279 H18006
127315	37938_1	AF116622 AI114507 AA840834 AA377999
103806	112618_1	AA130614 AA071410
128104	502608_1	AA906093 AA971000
104602	524482_2	H47610 R86920
128152	297868_1	F07973 R20353 AA442660
128422	1811283_1	T77784 T85681
127897	446527_1	AA773681 AA773857
106566	120358_1	BE298210 AI672315 AW086489 BE298417 AA455921 AA902537 BE327124 R14963 AA085210 AW274273 AI333584 AI369742 AI039588 AI885095 AI476470 AI287650 AI885299 AI985381 AW592624 AW340136 AI266556 AA456390 AI310815 AA484951
128735	44573_2	AI950087 N70208 R97040 N36809 AI308119 AW967677 N35320 AI251473 H59397 AW971573 R97278 W01059 AW967671 AA908598 AA251875 AI820501 AI820532 W87891 T85904 U71456 T82391 BE328571 T75102 R34725 AA884922 BE328517 AI219788 AA884444 N92578 F13493 AA927794 AI560251 AW874068 AL134043 AW235363 AA663345 AW008282 AA488984 AA283144 AI890387 AI950344 AI741346 AI689062 AA282915 AW102898 AI872193 AI763273 AW173586 AW150329 AI653832 AI762688 AA988777 AA488992 AI358394 AW103813 AI539642 AA642789 AA856975 AW505512 AI961530 AW629970 BE612881 AW276997 AW513601 AW512843 AA044209 AW856538 AA180009 AA337499 AW961101 AA251669 AA251874 AI819225 AW205862 AI683338 AI858509 AW276905 AI633006 AA972584 AA908741 AW072629 AW513996 AA293273 AA969759 N75628 N22388 H84729 H60052 T92487 AI022058 AA780419 AA551005 W80701 AW613456 AI373032 AI564269 F00531 H83488 W37181 W78802 R66056 AI002839 R67840 AA300207 AW959581 T63226 F04005
123147	219802_2	AA487961
130529	158447_1	AA178953 AA192740
123578	genbank_AA608983	AA608983
109175	genbank_AA180496	AA180496
100789	tgr_HT4163	S87998
100858	tgr_HT4515	U10072

	123798	579959_1	AA620411 AA287491
	102116	entrez_U13706	U13706
	102398	entrez_U42359	U42359
	102764	entrez_U82310	U82310
5	118475	genbank_N66845	N66845
	104776	genbank_AA026349	AA026349
	104787	genbank_AA027317	AA027317
	113702	genbank_T97307	T97307
	113938	genbank_W81598	W81598
10	122635	genbank_AA454085	AA454085
	108407	genbank_AA075519	AA075519
	108432	genbank_AA076626	AA076626
	108555	genbank_AA084963	AA084963
	101349	entrez_L77559	L77559
15	124447	genbank_N48000	N48000
	119071	genbank_R31180	R31180
	103520	entrez_Y10511	Y10511
	103663	genbank_Z78291	Z78291
	128046	877605_1	AA873285 AI025762
20	126959	546044_1	AA199853 AA206355
	123465	genbank_AA599033	AA599033

## **MISSING AT THE TIME OF PUBLICATION**

**TABLE 2:** shows a preferred subset of the Accession numbers for genes found in Table 1 which are differentially expressed in prostate tumor tissue compared to normal prostate tissue.

5	Pkey:	Unique Eos probeset identifier number		
	ExAccn:	Exemplar Accession number, Genbank accession number		
10	UnigenelD:	Unigene number		
	Unigene Title:	Unigene gene title		
	R1:	Ratio of tumor to normal body tissue (Relaxed ratio (87/70))		
15	Pkey	ExAccn	UnigenelD Unigene Title	R1
	131919	AA121266	Hs.272458 ESTs	37.2
	120328	AA196979	Hs.290905 ESTs; Weakly similar to (define not ava	32.6
	101486	M24802	Hs.1852 acid phosphatase; prostate	25.2
	119073	R32894	Hs.279477 ESTs	24.8
20	133428	M34376	Hs.183752 microseminoprotein; beta-	23.8
	128180	AA595348	Hs.171995 kallikrein 3; (prostate specific antigen	21.4
	104080	AA402971	Hs.57771 Homo sapiens mRNA for serine protease (T	18.9
	127537	AA569531	Hs.162859 ESTs	18.6
	131665	R22139	Hs.30343 ESTs	17.4
25	101050	K01911	Hs.1832 neuropeptide Y	17.3
	130771	N48056	Hs.1915 folate hydrolase (prostate-specific memb	17
	107485	W63793	Hs.262476 S-adenosylmethionine decarboxylase 1	16.7
	106155	AA425309	Hs.33287 ESTs	16.5
	129534	R73840	Hs.11260 ESTs	16.4
30	100569	HQ2281-HT2351	Antigen, Prostate Specific, Alt. Splice	16
	101889	S39329	Hs.181350 kallikrein 2; prostatic	15.4
	135389	U05237	Hs.99872 fetal Alzheimer antigen	15
	133944	AA045870	Hs.7780 ESTs	12.5
	130974	X57985	Hs.2178 H2B histone family; member Q	11.8
35	114768	AA149007	Hs.182339 ESTs	11.8
	104660	AA007160	Hs.14846 ESTs	11.4
	131061	N64328	Hs.268744 ESTs; Moderately similar to KIAA0273 [H.	10.9
	126645	AI167942	Hs.61635 Homo sapiens BAC clone RG041D11 from 7q2	10.7
	135153	N40141	Hs.95420 Homo sapiens mRNA for JM27 protein; comp	10.6
40	107033	AA599629	Hs.113314 ESTs	10.6
	118417	N66048	ESTs; Weakly similar to polymerase [H.sa	10.5
	126758	W37145	Hs.293960 ESTs	10.2
	107102	AA609723	Hs.30652 ESTs	10.1
	116787	H28581	Hs.15641 ESTs	10.1
45	115719	AA416997	Hs.59622 ESTs	10
	123209	AA489711	Hs.203270 ESTs	9.9
	101664	M50752	Hs.121017 H2A histone family; member A	9.8
	112971	T17185	Hs.83883 ESTs	9.7
	117984	N51919	Hs.106778 ESTs	9.7
50	129523	M30894	Hs.274509 T-cell receptor; gamma cluster	9.4
	132964	AA031360	Hs.167133 ESTs	9.2
	121853	AA425887	Hs.98502 ESTs	9
	119617	W47380	Hs.55999 ESTs	8.9
	105627	AA281245	Hs.23317 ESTs	8.8
55	101461	M22430	Hs.76422 phospholipase A2; group IIA (platelets;	8.7
	124526	N62096	Hs.293185 yz61c5.s1 Soares_multiple_sclerosis_2NbH	8.5
	133845	T68510	Hs.76704 ESTs	8.2
	133354	AA055552	Hs.334762 ESTs; Weakly similar to KIAA0319 [H.sapi	8.1
	119018	N95796	Hs.278695 ESTs	8
60	100394	D84276	Hs.86052 CD38 antigen (p45)	8
	106579	AA456135	Hs.23023 ESTs	7.6
	114965	AA250737	Hs.72472 ESTs	7.4
	112033	R43162	Hs.22627 ESTs	7.1
	102398	U42359	Human N33 protein form 1 (N33) gene, exo	7
65	101201	L22524	Hs.2256 matrix metalloproteinase 7 (matrilysin;	6.9
	101803	M86546	Hs.155691 pre-B-cell leukemia transcription factor	6.8
	120562	AA280036	Hs.302267 ESTs; Weakly similar to W01A6.c [C.elega	6.8

	109112	AA169379	Hs.257924	ESTs	6.8
	109785	F10707	Hs.326416	ESTs	6.7
	130336	X07730	Hs.171995	kallikrein 3; (prostate specific antigen	6.6
	131425	AA219134	Hs.26691	ESTs	6.6
5	132902	AA490969	Hs.59838	ESTs	6.6
	133724	U07919	Hs.75746	aldehyde dehydrogenase 6	6.5
	120215	Z41050	Hs.108787	Homo sapiens Mod4p homolog mRNA; complet	6.5
	131681	AA010163	Hs.3383	upstream regulatory element binding prot	6.5
	100727	X07290	Hs.334786	Human HF.12 gene mRNA	6.3
10	121770	AA421714	Hs.278428	Homo sapiens mRNA for KIAA0896 protein;	6.3
	123475	AA599267	Hs.250528	ESTs; Weakly similar to ANKYRIN; BRAIN V	6.3
	133061	AB000584	Hs.286638	prostate differentiation factor	6.3
	116429	AA609710	Hs.279923	ESTs; Weakly similar to similar to GTP-b	6.2
	101233	L29008	Hs.878	sorbitol dehydrogenase	6.2
15	104891	AA011176	Hs.37744	ESTs	6.2
	127248	AA325029	EST27953	Cerebellum II Homo sapiens cDNA	6.2
	105500	AA258485	Hs.222399	ESTs	6.1
	130828	AA053400	Hs.203213	ESTs	5.9
	115357	AA281793	Hs.72988	ESTs	5.8
20	116334	AA491457	Hs.48948	ESTs	5.7
	120132	Z38839	Hs.125019	ESTs; Weakly similar to IIII ALU SUBFAM I	5.6
	106375	AA443993	Hs.269072	ESTs	5.6
	124777	R41933	Hs.140237	ESTs; Weakly similar to neuronal thread	5.6
	101791	M83822	Hs.62354	Human beige-like protein (BGL) mRNA; par	5.5
25	117698	N41002	Hs.45107	ESTs	5.5
	122041	AA431407	Hs.98732	Homo sapiens Chromosome 16 BAC clone CIT	5.5
	133723	AA088851	Hs.262476	S-adenosylmethionine decarboxylase 1	5.5
	113938	W81598		ESTs	5.4
	133015	AA047036	Hs.246315	ESTs	5.4
30	108186	AA056482	Hs.7780	ESTs	5.3
	104466	N25110	Hs.326392	Human guanine nucleotide exchange factor	5.3
	104033	AA365031	Hs.98944	ESTs	5.3
	110844	N31952	Hs.167531	ESTs; Weakly similar to (define not ava	5.3
	129056	H70627	Hs.108336	ESTs; Weakly similar to IIII ALU SUBFAM I	5.3
35	133493	AA284143	Hs.194369	Homo sapiens chromosome 1 atrophin-1 rel	5.3
	129184	W26769	Hs.109201	ESTs; Highly similar to (define not ava	5.2
	101448	M21389	Hs.195850	keratin 5 (epidermolysis bullosa simplex	5.1
	116188	AA464728	Hs.184598	ESTs; Weakly similar to IIII ALU SUBFAM I	5.1
	105921	AA402613	Hs.169119	ESTs	5.1
40	103375	X91868	Hs.54416	sine oculis homeobox (Drosophila) homolo	5.1
	128871	AA400271	Hs.106778	ESTs; Highly similar to (define not ava	5.1
	116238	AA479362	Hs.47144	ESTs	5
	102913	X07696	Hs.80342	keratin 15	5
	103011	X52541	Hs.328035	early growth response 1	5
45	118981	N93839	Hs.39268	ESTs; Weakly similar to IIII ALU SUBFAM I	5

**TABLE 2A** shows the accession numbers for those primekeys lacking unigeneID's for Table 2. For each probeset we have listed the gene cluster number from which the oligonucleotides were designed. Gene clusters were compiled using sequences derived from Genbank ESTs and mRNAs. These sequences were clustered based on sequence similarity using Clustering and Alignment Tools (DoubleTwist, Oakland California). The Genbank accession numbers for sequences comprising each cluster are listed in the "Accession" column.

10

Pkey:	Unique Eos probeset identifier number
CAT number:	Gene cluster number
Accession:	Genbank accession numbers

15

Pkey	CAT number	Accession
118417	37186_1	AF080229 AF080231 AF080230 AF080232 AF080233 AF080234 BE550633 AI636743 AW614951 BE467547 AI680833 AI633818 N29986 U87592 U87593 U87590 U87591 S46404 U87587 AA463992 AW206802 AI970376 AI583718 AI672574 N25695 AW665466 AI818326 AA126128 AI480345 AW013827 AA248638 AI214968 AA204735 AA207155 AA206262 AA204833 AW003247 AW496808 AI080480 AI631703 AI651023 AI867418 AW818140 AA502500 AI206199 AI671282 AI362545 BE501030 AI652535 BE465762 AA206331 AW451866 AA471088 AA206342 AA204834 AA206100 AW021661 AA332922 N66048 AA703396 H92278 AW139734 H92683 U87589 U87595 H69001 U87594 BE466420 AI624817 BE466611 AI206344 AA574397 AA348354 AI493182
127248	227560_1	AA364185 AA325029 AW962050
107033	235652_1	AI141899 AA730176 R44544 R41778 AW300793 AW966157 AA918501 AA599629 AI082195 AI198537 AW006520 AW236663 AW151420 AI826987 AI810832 AI669102 AI201981 N27331 AA335566 T84622 BE085347 BE085269
102398	entrez_U42359	U42359
113938	genbank_W81598	W81598

20

25

**TABLE 3:** shows genes, including expression sequence tags, differentially expressed in prostate tumor tissue compared to normal tissue as analyzed using the Affymetrix/Eos Hu02 GeneChip array. Shown are the relative amounts of each gene expressed in prostate tumor samples and various normal tissue samples showing the highest expression of the gene.

10	Pkey:	Unique Eos probeset identifier number		
	ExAccn:	Exemplar Accession number, Genbank accession number		
	UnigeneID:	Unigene number		
	Unigene Title:	Unigene gene title		
15	R1:	Ratio of tumor to normal body tissue		
	Pkey	ExAccn	UnigeneID Unigene Title	R1
20	100131	D12485	Hs.11951 phosphodiesterase 1/nucleotide pyrophosphatase	6.3
	100235	D29954	Hs.13421 KIAA0056 protein	5.1
	100570	HG2261-HT2352	Hs.171995 Antigen, Prostate Specific, Aft. Splice	9
	100819	HG4020-HT4290	Hs.2387 Transglutaminase	10.5
	101063	L00354	Hs.80247 cholecystokinin	8.5
	101247	L33801	Hs.78802 glycogen synthase kinase 3 beta	4.7
25	101416	M17254	Hs.279477 v-ebs avian erythroblastosis virus E26 o	4.7
	101447	M21305	Human alpha satellite and satellite 3 ju	11
	101485	M24736	Hs.89546 selectin E (endothelial adhesion molecucl	9.8
	101514	M28214	Hs.123072 RAB3B; member RAS oncogene family	6.2
	101626	M57399	Hs.44 pleiotrophin (heparin binding growth fac	8.4
30	101663	M60750	Hs.2178 H2B histone family; member A	4.9
	101758	M77836	Hs.79217 pyrroline-5-carboxylate reductase 1	5.4
	101768	M81118	Hs.78989	7.5
	101817	M88163	Hs.152282 SWI/SNF related; matrix associated; acti	5.5
	101888	M99701	Hs.95243 transcription elongation factor A (SII)-	5.7
35	102031	U04898	Hs.2156 RAR-related orphan receptor A	13.2
	102052	U07559	Hs.505 ISL1 transcription factor; LIM/homeodoma	8.9
	102221	U24576	Hs.3844 LIM domain only 4	5.6
	102233	U26173	Hs.79334 nuclear factor; interleukin 3 regulated	7.4
	102302	U33052	Hs.69171 protein kinase C-like 2	8.2
40	102348	U37519	Hs.87539 aldehyde dehydrogenase 8	5.9
	102457	U48807	Hs.2359 dual specificity phosphatase 4	5.1
	102473	U49957	Hs.180398 LIM domain-containing preferred transloc	5.7
	102669	U71207	Hs.29279 eyes absent (Drosophila) homolog 2	9
	102698	U75272	Hs.1867 progastricsin (pepsinogen C)	10.6
45	102751	U80034	Hs.68583 mitochondrial intermediate peptidase	15.6
	102823	U90914	Hs.5057 carboxypeptidase D	4.9
	102869	X02544	Hs.572 orosomucoid 1	22.6
	103031	X54667	Hs.123114 cystatin S	4.7
	103043	X55733	Hs.93379 eukaryotic translation initiation factor	4.9
50	103093	X60708	Hs.44926 dipeptidylpeptidase IV (CD26; adenosine	5.8
	103376	X92098	Hs.323378 coated vesicle membrane protein	5.2
	103401	X95240	Hs.54431 specific granule protein (28 kDa); cyste	7.4
	103613	Z46629	Hs.2316 SRY (sex-determining region Y)-box 9 (ca	5.2
	103677	Z83806	H. sapiens mRNA for axonemal dynein heavy	4.9
55	103962	AA298180	Hs.83243 ESTs	6
	104084	AA410529	Hs.30732 ESTs	6.4
	104257	AF006265	Hs.9222 estrogen receptor-binding fragment-assoc	6.8
	104301	D45332	Hs.6783 ESTs	10.5
	104789	AA025987	Hs.293943 ESTs; Weakly similar to IIII ALU SUBFAM	6.3
60	104851	AA040882	Hs.10290 U5 snRNP-specific 40 kDa protein (hPrp8-	4.9
	104896	AA054228	Hs.23165 ESTs	5.8
	104956	AA074880	Hs.20509 ESTs; Weakly similar to hypothetical pro	6.4
	104957	AA074919	Hs.10026 ESTs; Weakly similar to ORF YJL063c [S.c	4.8
	104967	AA084506	Hs.291000 ESTs	6.5
65	105099	AA150776	Hs.23729 Homo sapiens clone 24405 mRNA sequence	7
	105298	AA233459	Hs.26369 ESTs	5.1



	105304	AA233553	Hs.190325	ESTs	4.7
	105370	AA236476	Hs.22791	ESTs; Weakly similar to transmembrane pr	10.3
	105427	AA251330	Hs.28248	ESTs	5
5	105542	AA261858	Hs.266957	ESTs; Weakly similar to heat shock prote	8.8
	105628	AA281251	Hs.79828	ESTs; Weakly similar to putative zinc fi	5.5
	105640	AA281823	Hs.6685	ESTs; Weakly similar to KIAA0742 protein	8
	105845	AA282138	Hs.11325	ESTs	14
	105691	AA287097	Hs.289068	transcription factor 4	6.3
10	105730	AA292701	Hs.5384	DKFZP564I052 protein	4.9
	105808	AA393808	Hs.286131	KIAA0438 gene product	7
	105826	AA398243	Hs.194477	ESTs; Moderately similar to similar to N	5
	105903	AA401433	Hs.200016	ESTs; Weakly similar to diphosphoinosito	8.9
	105906	AA401633	Hs.22380	ESTs	11.5
15	106065	AA417558	Hs.25206	ESTs	5.1
	106094	AA419481	Hs.23317	ESTs	10.9
	106157	AA425367	Hs.34892	ESTs	6.6
	106184	AA426643	Hs.10762	ESTs	8.5
	106211	AA428240	Hs.126083	ESTs	8.4
20	106213	AA428258	Hs.8769	Homo sapiens mRNA; cDNA DKFZp564E153 (fr	5.7
	106272	AA432074	Hs.323099	ESTs	5.8
	106369	AA443828	Hs.288856	ESTs	6.3
	106400	AA447621	Hs.94109	ESTs	5.4
	106474	AA450212	Hs.42484	Homo sapiens mRNA; cDNA DKFZp564C053 (fr	9.2
25	106507	AA452584	Hs.267819	protein phosphatase 1; regulatory (inhib	5.6
	106523	AA453441	Hs.31511	ESTs	4.7
	106532	AA453628	Hs.37443	ESTs	4.7
	106557	AA455087	Hs.22247	ESTs	5.7
	106575	AA456039	Hs.105421	ESTs	7.2
30	106618	AA458249	Hs.8715	ESTs; Weakly similar to Similarity with	5.6
	106820	AA481037	Hs.12592	ESTs	5.4
	106846	AA485223	Hs.34892	ESTs	5.3
	106973	AA506141	Hs.11923	Human DNA sequence from clone 167A19 on	7.5
	107110	AA609952	Hs.12784	KIAA0293 protein	6.1
35	107127	AA620504	Hs.179898	ESTs	7.1
	107159	AA621340	Hs.10600	ESTs; Weakly similar to ORF YKR081c [S.c	5.2
	107217	D51095	Hs.35861	DKFZP586E1621 protein	15.1
	107365	U78294	Hs.111256	arachidonate 15-lipoxygenase; second typ	4.7
	107630	AA007218	Hs.60178	ESTs	5.3
40	107734	AA016225	Hs.7517	ESTs	4.8
	107760	AA018042	Hs.252085	EST	7.6
	107997	AA037388	Hs.82223	Human DNA sequence from clone 141H5 on c	10.5
	108012	AA039616	Hs.173334	ESTs	8.5
	108520	AA084138	Hs.46786	ESTs	7.9
45	108583	AA088276	Hs.68826	ESTs	5.8
	108613	AA100967	Hs.69165	ESTs	6
	108664	AA113349	Hs.69588	EST	6.3
	108677	AA115829	Hs.118531	ESTs	5.9
	108807	AA129968	Hs.49376	ESTs; Weakly similar to PROTEIN PHOSPHAT	5.8
50	108910	AA136590		ESTs	5
	108933	AA147224	Hs.337232	ESTs	12.7
	108948	AA149579	Hs.118258	ESTs	6.8
	109014	AA156780	Hs.262036	ESTs	15.3
	109124	AA171529	Hs.183887	ESTs	6.1
	109142	AA176438	Hs.41295	ESTs	5.1
55	109277	AA196332	Hs.86043	ESTs	5.5
	109342	AA213620		Homo sapiens mRNA; cDNA DKFZp586M1418 (fr	10.8
	109562	F01811	Hs.187931	ESTs; Moderately similar to voltage-gate	10.8
	109565	F01930	Hs.23648	ESTs	7
	109648	F04600	Hs.7154	ESTs	9.9
60	109789	F10770	Hs.180378	Homo sapiens clone 669 unknown mRNA; com	6.4
	109859	H02308	Hs.20792	ESTs	5.3
	110181	H20276	Hs.31742	ESTs	16.8
	110854	N32919	Hs.27931	ESTs	10
65	110924	N47938	Hs.12940	yy84a09.s1 Soares_multiple_sclerosis_2Nb	5.6
	111048	N55514	Hs.318584	ESTs	6.9
	111091	N59858	Hs.33032	Homo sapiens mRNA; cDNA DKFZp434N185 (fr	5.2
	111157	N66613	Hs.99364	ESTs	5
	111164	N66857	Hs.122489	ESTs; Weakly similar to !!! ALU CLASS C	5.6
	111221	N68869	Hs.15119	ESTs	6.2

	111348	N90041	Hs.8585	ESTs	5.4
	111353	N90430	Hs.6616	ESTs	5.3
	111495	R07210	Hs.9683	ESTs	5.8
	111540	R08850	Hs.9786	ESTs	6
5	111579	R10657	Hs.167115	KIAA0830 protein	12.6
	111581	R10684	Hs.5794	ESTs	7.1
	111734	R25375	Hs.128749	ESTs	6.2
	111861	R37450	Hs.25231	ESTs	9.4
	111870	R37778	Hs.18685	ESTs; Weakly similar to hypothetical pro	6.5
10	111937	R40431	Hs.14846	Homo sapiens mRNA; cDNA DKFZp564D016 (fr	4.8
	111987	R42036	Hs.6763	KIAA0942 protein	6.4
	112184	R49173	Hs.330242	ESTs	5.6
	112286	R53765	Hs.158135	KIAA0981 protein	9.3
	112380	R59740	Hs.5740	ESTs	4.7
15	112452	R63841	Hs.157461	ESTs	6
	112601	R79111	Hs.78225	annexin A1	5.4
	112753	R93696	Hs.169882	ESTs	5.8
	112902	T09262	Hs.129190	ESTs	5.1
	112984	T23457	Hs.289014	ESTs	4.9
20	113021	T23855	Hs.129836	KIAA1028 protein	10.8
	113083	T40530	Hs.266957	ESTs; Weakly similar to heat shock prote	5.7
	113200	T57773	Hs.10263	ESTs	7.3
	113494	T88878	Hs.86538	ESTs	8.7
	113849	W60439	Hs.8858	ESTs; Moderately similar to cbp146 (M.mu	4.9
25	113883	W72382	Hs.11958	oxidative 3 alpha hydroxysteroid dehydro	4.7
	113950	W85765	Hs.30504	Homo sapiens mRNA; cDNA DKFZp434E082 (fr	6.7
	113986	W87482	Hs.21894	ESTs	5.9
	113989	W87544	Hs.268828	ESTs	4.7
	114124	Z38595	Hs.125019	ESTs; Highly similar to KIAA0886 protein	21.3
30	114340	Z41395	Hs.143611	ESTs	9.6
	114346	Z41450	Hs.130489	ESTs	5.2
	114435	AA018216	Hs.164975	Bicaudal D (Drosophila) homolog 1	7.4
	114463	AA025370	Hs.40109	KIAA0872 protein	8.2
	114652	AA101416	Hs.107149	ESTs; Weakly similar to PTB-ASSOCIATED S	5.4
35	114721	AA131450	Hs.103822	ESTs	4.8
	114730	AA133527	Hs.331328	ESTs; Weakly similar to The KIAA0138 gen	5.1
	114833	AA234362	Hs.87159	ESTs; Moderately similar to CGI-66 prote	5.5
	114860	AA235112	Hs.42179	ESTs; Moderately similar to similar to m	6.3
	114884	AA235811	Hs.293672	ESTs	5.2
40	114895	AA236177	Hs.76591	KIAA0887 protein	4.7
	114908	AA236545	Hs.54973	ESTs	5.2
	114932	AA242751	Hs.16218	KIAA0903 protein	5.7
	115084	AA255566	Hs.42484	Homo sapiens mRNA; cDNA DKFZp564C053 (fr	5.2
	115140	AA258030	Hs.279938	ESTs; Weakly similar to supported by GEN	5.9
45	115468	AA287061	Hs.48499	ESTs; Highly similar to Bdelight protein	4.7
	115583	AA398913	Hs.45231	LDOC1 protein	7.6
	115709	AA412519	Hs.58279	ESTs	4.8
	115772	AA423972	Hs.131740	ESTs	5
	115774	AA424029	Hs.288390	ESTs; Moderately similar to dynamin; int	5.4
50	115776	AA424038	Hs.81897	ESTs	5
	115821	AA427528	Hs.130985	ESTs; Weakly similar to ZINC FINGER PROT	13.7
	115955	AA446121	Hs.44188	Homo sapiens BAC clone RG054D04 from 7q3	10.6
	116024	AA451748	Hs.83883	Human DNA sequence from clone 718J7 on c	6.8
	116108	AA457566	Hs.28777	ESTs	6
55	116117	AA459117	Hs.31575	SEC63; endoplasmic reticulum translocon	7.3
	116146	AA460701	Hs.15423	ESTs	5.5
	116296	AA489033	Hs.62601	Homo sapiens mRNA; cDNA DKFZp586K1318 (f	5.7
	116379	AA521472	Hs.71252	ESTs	5.9
	116393	AA599463	Hs.306051	protein phosphatase 2 (formerly 2A); reg	5.9
60	116401	AA599963	Hs.59698	ESTs	7.9
	116416	AA609219	Hs.39982	ESTs	9.2
	116587	D59325	Hs.121429	ESTs	5.2
	116601	D80055	Hs.45140	ESTs	4.9
	116684	F09156	Hs.66095	ESTs	7.2
65	116722	F13654	HSFH32 Stratagene cat#937212 (1992) Hom		5.5
	116766	H13260	Hs.95097	ESTs	5.9
	117453	N29568	Hs.108319	thyroid hormone receptor-associated prot	6.9
	117557	N33920	Hs.44532	diubiquitin	4.8
	117708	N45114	Hs.126280	ESTs	6.3

	118001	N52151	Hs.47447	ESTs	11.4
	118229	N62339	Hs.166254	heat shock 90kD protein 1; alpha	6.2
	118599	N69207	Hs.203697	ESTs	5.8
5	118645	N70358	Hs.125180	growth hormone receptor	7.1
	118873	N89881	Hs.44577	ESTs	6
	118985	N94303	Hs.55028	ESTs	9.3
	119107	R42424	Hs.63841	ESTs	6
	119126	R45175	Hs.117183	ESTs	17.9
	119271	T16387	Hs.65328	ESTs	6
10	119367	T78324	Hs.250895	ESTs	5
	119721	W69440	Hs.48376	ESTs	15.4
	119741	W70205	Hs.43670	kinesin family member 3A	10.1
	119780	W72987	Hs.191381	ESTs; Weakly similar to hypothetical pro	5.3
	120217	Z41078	Hs.66035	ESTs	4.8
15	120266	AA173939	Hs.205442	ESTs; Weakly similar to inner centromere	8.8
	120294	AA190888	Hs.153881	ESTs; Highly similar to NY-REN-62 antigen	4.9
	120418	AA236010	Hs.26613	Homo sapiens mRNA; cDNA DKFZp586F1323 (f	4.7
	120486	AA253400	Hs.137569	tumor protein 63 kDa with strong homolog	5.6
	120524	AA261852	Hs.192805	ESTs	4.9
20	120571	AA280738	Hs.34892	ESTs	8.8
	120596	AA282074	Hs.237323	ESTs	6.2
	120713	AA292655	Hs.96557	ESTs	9.9
	120992	AA398246	Hs.97594	ESTs	16.4
	121429	AA406293	Hs.41167	ESTs	6.9
25	121503	AA412049	Hs.290347	ESTs	7.6
	121512	AA412105	Hs.193736	ESTs	5.8
	121816	AA424814	Hs.48827	ESTs	4.6
	122027	AA431302	Hs.98721	EST; Weakly similar to N-copine [H.sapie	5.6
	122294	AA437311	Hs.98927	ESTs	5.7
30	122411	AA446859	Hs.99083	ESTs	6.5
	122791	AA460158	Hs.129836	KIAA1028 protein	12.4
	122792	AA460225	Hs.99519	ESTs	5.1
	122969	AA478539	Hs.104336	ESTs	4.9
35	123085	AA485724	Hs.27413	ESTs	5.4
	123100	AA485957	Hs.306219	Homo sapiens clone 25032 mRNA sequence	5
	123295	AA495981	Hs.250830	ESTs	4.7
	123311	AA496252	Hs.105069	ESTs	7.4
	123583	AA609006	Hs.111240	ESTs	9.1
	123619	AA609200		ESTs	4.7
40	123645	AA609310	Hs.188691	ESTs	4.8
	123709	AA609651	Hs.112742	ESTs	7
	123958	C14333	Hs.108327	damage-specific DNA binding protein 1 (1	5
	124178	H45996	Hs.97101	putative G protein-coupled receptor	6.8
	124352	N21626	Hs.102406	ESTs	10.2
45	124357	N22401		yw37g07.s1 Morton Fetal Cochlea Homo sap	10.6
	124515	N58172	Hs.109370	ESTs	14.2
	124911	R88992	Hs.174185	ESTs	4.8
	125154	W38419		ESTs	4.7
	125992	W01626		za36e07.r1 Soares fetal liver spleen 1NF	5.1
50	126802	AA947601	Hs.97056	ESTs	5.1
	126812	Z36290	Hs.173933	ESTs; Weakly similar to NUCLEAR FACTOR 1	4.6
	127080	AA662913	Hs.190173	ESTs	5
	127308	AA507628	Hs.334390	ESTs	4.8
	127370	AA024352	Hs.70337	immunoglobulin superfamily; member 4	4.7
55	127386	AA57411	Hs.106728	ESTs	4.8
	127965	AA828760	Hs.292059	ESTs	4.8
	128172	AA00862	Hs.265130	ESTs	5
	128305	AA039722	Hs.279009	ESTs	5.8
	128420	AA088155	Hs.41296	ESTs; Weakly similar to unknown [H.sapie	17
60	128467	AA176446	Hs.180428	ESTs; Weakly similar to hypothetical 43.	4.8
	128610	L38608	Hs.10247	activated leucocyte cell adhesion molecu	7.9
	128625	AA242816	Hs.102652	ESTs; Weakly similar to KIAA0437 [H.sapi	8.1
	128651	AA446990	Hs.103135	ESTs	6.5
	129088	AA215971	Hs.194431	KIAA0992 protein	5.2
65	129136	N26391	Hs.250723	ESTs	5.1
	129171	AA234048	Hs.7753	calumenin	5.8
	129229	AA211941	Hs.109643	polyadenylate binding protein-interactin	5.8
	129366	N27524	Hs.260024	Cdc42 effector protein 3	5.2
	129467	AA410311	Hs.44208	ESTs	5.1

	129564	H22136	Hs.75285	guanylate cyclase 1; soluble; alpha 3	16.3
	129699	AA458578	Hs.12017	KIAA0439 protein; homolog of yeast ubliq	9.2
	129821	F11019	Hs.12696	cortactin SH3 domain-binding protein	8.6
	129823	X00948	Hs.105314	relaxin 2 (H2)	9.1
5	129847	W46767	Hs.296178	ESTs; Weakly similar to RNA POLYMERASE I	5.4
	129912	AA047344	Hs.107213	ESTs; Highly similar to NY-REN-6 antigen	6.5
	129958	L20591	Hs.1378	annexin A3	5.1
	129977	J04076	Hs.1395	early growth response 2 (Krox-20 (Drosop	8.6
	130061	U82256	Hs.172851	arginase; type II	7.4
10	130241	U78313	Hs.153203	MyoD family inhibitor	4.9
	130488	N21679	Hs.180059	ESTs	5.8
	130541	X05608	Hs.211584	neurofilament; light polypeptide (68kD)	6.7
	130619	AA477739	Hs.12532	ESTs	6.4
	130925	N71935	Hs.169378	multiple PDZ domain protein	7.9
15	130938	AA013250	Hs.21398	ESTs; Moderately similar to PUTATIVE GLU	6.2
	130971	H20332	Hs.301444	signal sequence receptor; gamma (translo	6.4
	131066	F09006	Hs.22588	ESTs	5
	131126	F09012	Hs.181326	myotubularin related protein 2	6.4
	131310	J02950	Hs.2551	adrenergic; beta-2-; receptor; surface	7.9
20	131487	AA253220	Hs.27373	Homo sapiens mRNA; cDNA DKFZp564O1763 (f5.9	15.9
	131561	X59841	Hs.294101	pre-B-cell leukemia transcription factor	7.6
	131562	U90551	Hs.28777	H2A histone family; member L	5.1
	131579	N62922	Hs.29088	ESTs	11
	131629	AA442119	Hs.238809	ESTs	4.9
25	131682	AA428368	Hs.30654	ESTs	4.8
	131699	R68657	Hs.90421	ESTs; Moderately similar to !!! ALU SUB	6.5
	131795	N32724	Hs.32317	Sox-like transcriptional factor	5.6
	132053	H93381	Hs.38085	ESTs; Weakly similar to putative glycine	7.2
	132122	U65092	Hs.40403	Cbp/p300-interacting transactivator; wit	5.6
30	132191	AA449431	Hs.288361	KIAA0741 gene product	8
	132256	AA608856	Hs.431	murine leukemia viral (bml-1) oncogene h	5.5
	132482	AA429478	Hs.238126	ESTs; Highly similar to CGI-49 protein [	6.6
	132533	AA021608	Hs.172510	ESTs	5.8
	132572	AA448297	Hs.237825	signal recognition particle 72kD	6.2
35	132581	R42266	Hs.52256	ESTs; Weakly similar to beta-TrCP protei	16
	132700	N47109	Hs.5521	ESTs	6.8
	132701	AA279359	Hs.55220	BCL2-associated athanogene 2	5.3
	132725	L41887	Hs.184167	splicing factor; arginine/serine-rich 7	7.8
	132783	N74897	Hs.278894	DEAD/H (Asp-Glu-Ala-Asp/His) box polypep	5.9
40	132790	X75535	Hs.168670	peroxisomal farnesylated protein	8
	132839	U76189	Hs.61152	exostoses (multiple)-like 2	5.2
	133142	F03321	Hs.65874	ESTs	5.2
	133342	U29589	Hs.7138	cholinergic receptor; muscarinic 3	10.3
	133434	AA278852	Hs.30212	ESTs	5.8
45	133453	M68941	Hs.73826	protein tyrosine phosphatase; non-recept	4.9
	133520	X74331	Hs.74519	primase; polypeptide 2A (58kD)	13.1
	133544	T33873	Hs.74624	protein tyrosine phosphatase; receptor I	4.6
	133608	D13315	Hs.75207	glyoxalase I	4.8
	133626	H75939	Hs.75277	Homo sapiens mRNA; cDNA DKFZp586M141 (fr 5	5
50	133633	D21262	Hs.75337	nucleolar phosphoprotein p130	6.3
	133797	S66431	Hs.76272	retinoblastoma-binding protein 2	6
	133928	N34086	Hs.7766	ubiquitin-conjugating enzyme E2E 1 (homo	5.4
	134095	U47414	Hs.78069	cyclin G2	5.2
	134249	N89827	Hs.80667	RALBP1 associated Eps domain containing	6.5
55	134321	AA418230	Hs.8172	ESTs	7
	134453	X70683	Hs.83484	SRY (sex determining region Y)-box 4	4.7
	134542	X57025	Hs.85112	insulin-like growth factor 1 (somatomedi	7.7
	134570	U66615	Hs.172280	SWI/SNF related; matrix associated; acti	6.4
	134592	U82613	Hs.289104	Alu-binding protein with zinc finger dom	5.4
60	134654	W23625	Hs.8739	ESTs; Weakly similar to ORF YGR200c [S.c	5
	134666	AA482319	Hs.8752	putative type II membrane protein	5.4
	134806	Z49099	Hs.89718	spermine synthase	6.7
	134951	AA431480	Hs.169358	ESTs	9.8
	135066	X04602	Hs.93913	interleukin 6 (interferon; beta 2)	5.7
65	135155	AA358268	Hs.166556	ESTs; Moderately similar to transcriptio	4.9
	135411	L10333	Hs.99947	reticulum 1	5.3
	300023	M10098		AFFX control: 18S ribosomal RNA	4.6
	300254	AW079607	Hs.65610	ESTs; Weakly similar to ZnT-3 [H.sapiens	7.8
	300273	AW013907	Hs.167531	ESTs; Moderately similar to predicted us	11.5

	300319	AW157646	Hs.153506	ESTs; Weakly similar to microtubule-acti	8.5
	300566	H86709	Hs.326392	son of sevenless (Drosophila) homolog 1	5.8
	300578	AI989417	Hs.134289	ESTs	4.4
	300671	AI239708	Hs.93810	ESTs	7.9
5	300675	AA039352	Hs.125034	ESTs; Weakly similar to ORF YDL040c [S.c	4.5
	300680	AW468066	Hs.24817	ESTs; Weakly similar to KIAA0986 protein	5.2
	300782	AJ497778	Hs.20509	ESTs	6.4
	300810	AJ076890	Hs.146847	ESTs	5.8
	300813	AA406411	Hs.208341	ESTs; Weakly similar to KIAA0989 protein	10.6
10	300823	AI863068	Hs.106823	ESTs; Weakly similar to putative zinc fi	5.6
	300834	AF109300	Hs.147824	ESTs	6.7
	300923	AW136372	Hs.1852	ESTs	7.6
	300962	AA593373	Hs.283744	ESTs	5.5
	301016	AA947682	Hs.20252	ESTs; Weakly similar to Chain A; Cdc42hs	7
15	301042	AI659131	Hs.197733	ESTs	24.9
	301242	AW161535	Hs.23782	ESTs	11.8
	301254	AI049624	Hs.263390	EST cluster (not in UniGene) with exon h	4.3
	301262	H29500	Hs.7130	ESTs; Moderately similar to N-copine [H.	4.3
	301388	AA156879	Hs.262036	ESTs; Weakly similar to ZINC FINGER PROT	6.6
20	301563	AI802846	Hs.44208	ESTs; Weakly similar to match to ESTs AA	5.7
	301656	AW008475	Hs.151258	EST cluster (not in UniGene) with exon h	6.8
	301689	Z44810	Hs.301789	ESTs; Weakly similar to similar to C.ele	6.3
	301783	AL046347	Hs.83937	Homo sapiens PAC clone DJ1159004 from 7p	6.2
	301805	AI800004	Hs.142846	ESTs; Weakly similar to MasP1 [M.musculu	8.5
25	301846	R20002	Hs.5823	ESTs; Weakly similar to intrinsic factor	4.6
	301891	AF131855	Hs.278591	Homo sapiens clone 25056 mRNA sequence	6.3
	302005	AI869686	Hs.123119	ESTs	36.8
	302056	AI457532	Hs.30488	ESTs; Moderately similar to ROSA26AS [M.	9.5
	302067	H05698	Hs.222399	ESTs; Weakly similar to protein-tyrosine	5.8
30	302099	AL021397	Hs.137576	ribosomal protein L34 pseudogene 1	8.8
	302147	AB022880	Hs.151717	KIAA0437 protein	5.9
	302214	AJ001454	Hs.159425	Homo sapiens mRNA for testican-3	4.3
	302236	AI128606	Hs.6557	zinc finger protein 181	4.3
	302358	DB1150	Hs.322848	EST cluster (not in UniGene) with exon h	5.5
35	302410	NM_004917	Hs.218366	EST cluster (not in UniGene) with exon h	26.8
	302486	AC003682	Hs.183512	multiple UniGene matches	8.2
	302582	NM_000522	Hs.249185	EST cluster (not in UniGene) with exon h	6.4
	302785	AA425562	Hs.11065	EST cluster (not in UniGene) with exon h	5
	302792	AA343996	Hs.46821	ESTs; Weakly similar to putative [H.sapi	4.8
40	302881	AA508353	Hs.105314	relaxin 1 (H1)	78.8
	302892	N58545	Hs.42346	histone deacetylase 3	8.5
	302970	AW118352	Hs.312679	EST cluster (not in UniGene) with exon h	7.4
	302977	AW263124	Hs.315111	EST cluster (not in UniGene) with exon h	5.5
	303029	AF199613	Hs.111782	EST cluster (not in UniGene) with exon h	4.6
45	303125	AF161352	Hs.111782	EST cluster (not in UniGene) with exon h	5.8
	303280	AI571580	Hs.170307	ESTs	4.3
	303306	AA215297	Hs.61441	EST cluster (not in UniGene) with exon h	6.4
	303309	AL134184	Hs.145416	ESTs	6.6
	303344	AA255977	Hs.250646	ESTs; Highly similar to ubiquitin-conjug	19.5
50	303380	AA298471	Hs.326567	EST cluster (not in UniGene) with exon h	6.6
	303401	AA758552	Hs.309497	ESTs	6.8
	303525	AW516519	Hs.273294	ESTs	4.8
	303526	AA348111	Hs.96900	ESTs	12.1
	303540	AA355807	Hs.309490	ESTs; Weakly similar to MMSET type I [H.	8.2
55	303572	AW338520	Hs.242540	ESTs	8.4
	303585	AW500106	Hs.23843	EST cluster (not in UniGene) with exon h	4.9
	303699	D30891	Hs.19525	EST cluster (not in UniGene) with exon h	15.7
	303702	AW500748	Hs.224961	ESTs; Weakly similar to 73 kDa subunit o	6.3
	303718	AJ741397	Hs.114658	ESTs	4.6
60	303722	AA521510	Hs.145010	ESTs	12.5
	303732	AW502405	Hs.125759	ESTs; Weakly similar to tumor suppressor	4.3
	303735	AA707750	Hs.169055	ESTs; Weakly similar to cis-Golgi matrix	5.4
	303752	AI017286	Hs.5957	EST cluster (not in UniGene) with exon h	5.3
	303753	AW503733	Hs.9414	ESTs	13
65	303813	AI275850	Hs.114658	EST cluster (not in UniGene) with exon h	7.8
	304053	R00493	Hs.125565	translocase of inner mitochondrial membr	4.8
	304218	N66373	Hs.27973	ESTs; Weakly similar to ZK354.7 [C.elega	6
	305200	AA668128	Hs.45207	EST singleton (not in UniGene) with exon	5.7
	306716	AI024916	Hs.251354	ESTs	5.7

	307848	AI384186	EST singleton (not in UniGene) with exon	7.3
	307871	AI368665	Hs.31476 EST singleton (not in UniGene) with exon	5.4
	308050	AI460004	Hs.31808 EST singleton (not in UniGene) with exon	8.1
5	308362	AI613519	Hs.105749 EST singleton (not in UniGene) with exon	5.5
	308923	AI863051	Hs.279815 ESTs	4.4
	309116	AI927149	Hs.29797 ribosomal protein L10	4.5
	309375	AW075342	Hs.9271 EST singleton (not in UniGene) with exon	7.4
	309674	AW205604	Hs.266009 ESTs; Weakly similar to HIII ALU SUBFAM I	5
10	310095	AI921750	Hs.144871 ESTs	5
	310098	AI685841	Hs.161354 ESTs	11.6
	310250	AI478629	Hs.158465 ESTs	5.8
	310365	AI262148	Hs.145569 ESTs	9.7
	310382	AI734009	Hs.127699 EST cluster (not in UniGene)	10.4
	310409	AI612775	Hs.145710 ESTs	4.6
15	310431	AI420227	Hs.149358 ESTs	72.9
	310573	AW292180	Hs.156142 ESTs	7.6
	310598	AI338013	Hs.140546 ESTs	9.2
	310639	AW269082	Hs.175162 ESTs	4.5
	310787	AW262580	Hs.147674 ESTs	4.9
20	310816	AI973051	Hs.224965 ESTs	7.8
	311251	AI555862	Hs.197698 ESTs	41.3
	311280	AI767957	Hs.188248 ESTs; Weakly similar to Y38A8.1 gene pro	4.5
	311330	AI679524	Hs.201629 ESTs; Moderately similar to HIII ALU SUB	4.8
25	311515	AW136713	Hs.23862 ESTs	5.9
	311574	AI824863	Hs.211420 ESTs	4.8
	311587	AI828254	Hs.271019 ESTs	5.8
	311596	AI682088	Hs.79375 ESTs	26.4
	311631	AI809519	Hs.27133 ESTs	6.4
30	311688	AW025681	Hs.240090 ESTs	7.4
	311783	AI682478	Hs.13528 EST	4.6
	311826	AA765470	Hs.85082 ESTs	6.7
	311853	AW014013	Hs.107056 ESTs	5.3
	311901	R16890	Hs.137135 ESTs	5.6
35	311932	AW451654	Hs.257482 ESTs	4.3
	312153	AA759250	Hs.118625 cytochrome b-561	11
	312182	AA834800	Hs.326263 EST cluster (not in UniGene)	16.9
	312242	AI380207	Hs.125276 ESTs	4.7
	312296	C01367	Hs.127128 ESTs	5.3
40	312407	R46180	Hs.153485 ESTs	6.2
	312424	AA847398	Hs.291997 ESTs	4.8
	312425	RA9353	Hs.293892 ESTs	5.2
	312480	R68651	Hs.144997 ESTs	9.5
	312518	C17785	Hs.182738 ESTs	6.3
45	312521	AA033609	Hs.239884 ESTs	11.2
	312527	AI695522	Hs.191271 ESTs	4.7
	312539	AI004377	Hs.200360 ESTs	7
	312546	AI623511	Hs.118567 ESTs	5.1
	312563	AA976064	Hs.180842 ESTs	6.5
50	312623	AA694607	Hs.176956 EST cluster (not in UniGene)	10.8
	312857	AA772279	Hs.126914 ESTs	5
	312890	AI813654	Hs.5957 ESTs	5.8
	312903	AA939266	Hs.278626 ESTs	7.7
	312905	H92571	Hs.234478 ESTs	6.5
55	312976	AA836271	Hs.125830 ESTs	4.6
	312983	AI078278	Hs.269899 ESTs	5.1
	312996	AA249018	Hs.154331 EST cluster (not in UniGene)	7
	313035	N36417	Hs.144928 ESTs	6.3
	313166	AI801098	Hs.151500 ESTs	4.3
60	313188	AI039702	Hs.178573 collagen; type I; alpha 2	4.8
	313218	AA827805	Hs.124296 ESTs	5
	313226	AI200281	Hs.123910 ESTs	5.9
	313325	AI420611	Hs.127832 ESTs	4.6
	313326	AI088120	Hs.122329 ESTs	7.4
65	313425	AA745689	Hs.186838 ESTs; Weakly similar to similar to zinc	6.3
	313499	AI261390	Hs.146085 ESTs	5.6
	313540	AI797301	Hs.5740 ESTs	5.9
	313568	AW467376	Hs.129840 ESTs	4.3
	313569	AI273419	Hs.135146 ESTs; Weakly similar to ZK1058.5 [C.eleg	4.6
	313603	AW468119	Hs.287631 EST cluster (not in UniGene)	6.8

	313615	AW295194	Hs.301997	DKFZP434N126 protein	5.2
	313625	AW468402	Hs.254020	ESTs	7.8
	313634	AA688282	Hs.337786	ESTs	4.4
	313635	AA507227	Hs.6390	ESTs	8.1
5	313638	AJ753075	Hs.104627	ESTs	6.7
	313670	C16690	Hs.23767	EST cluster (not in UniGene)	4.4
	313671	W49823	Hs.104613	ESTs	4.4
	313676	AA861697	Hs.120591	EST cluster (not in UniGene)	13.4
10	313703	AI161293	Hs.280380	ESTs; Weakly similar to KIAA0525 protein	10
	313712	AA768553	Hs.74170	ESTs	5.2
	313800	AW296132	Hs.55098	ESTs	5.4
	313979	AI535895	Hs.221024	ESTs	4.3
	314121	AJ732100	Hs.187619	ESTs	13.6
15	314123	AW245893	Hs.223394	ESTs	6.4
	314171	AJ821895	Hs.193481	ESTs	29.4
	314188	AL138431	Hs.164243	ESTs	4.6
	314219	AL036001	Hs.48376	ESTs	5.7
	314236	AA743396	Hs.189023	ESTs	4.9
	314237	AA732359	Hs.96264	ESTs	4.4
20	314284	AA731431	Hs.293464	EST cluster (not in UniGene)	6.4
	314305	AI280112	Hs.125232	ESTs	5.3
	314343	AJ754701	Hs.328476	ESTs; Weakly similar to alternatively sp	6.2
	314530	AI052358	Hs.193726	ESTs	4.5
25	314691	AW207206	Hs.136319	ESTs	17
	314695	AW502698	Hs.118152	ESTs	8.9
	314785	AI538226	Hs.32976	ESTs	9.4
	314801	AA481027	Hs.109045	ESTs; Weakly similar to ORF YGR245c [S.c	8
	314864	AA493811	Hs.294058	ESTs	8
30	314907	AI872225	Hs.222888	ESTs	19.3
	314916	AA548906	Hs.122244	ESTs	4.5
	314954	AA521381	Hs.187726	ESTs	5.3
	314981	AA524953	Hs.293334	ESTs	4.6
	315021	AA533447	Hs.312989	EST cluster (not in UniGene)	5.1
35	315051	AW292425	Hs.163484	EST	15.5
	315052	AA876910	Hs.134427	ESTs	20
	315073	AW452848	Hs.257631	ESTs	5.3
	315084	AI821085		ESTs	8.2
	315214	AI915827	Hs.34771	ESTs	5.4
40	315220	AI420753	Hs.66731	ESTs	5.1
	315278	AI885544	Hs.12450	ESTs	5.8
	315282	AI222165	Hs.144923	ESTs	4.5
	315368	AW291563	Hs.104696	ESTs	8
	315369	AA764918	Hs.256531	ESTs	4.8
	315378	AI263393	Hs.145008	ESTs	8.2
45	315379	AI378329	Hs.126629	ESTs	5.4
	315402	AW293424	Hs.75354	ESTs	5.1
	315442	AA977835	Hs.127274	ESTs	6.6
	315443	AW003416	Hs.160604	ESTs	5.5
	315528	R37257	Hs.184780	ESTs	8.1
50	315583	AW198103	Hs.158154	ESTs	9.9
	315634	AA837085	Hs.220585	ESTs	7.8
	315705	AW449285	Hs.313636	ESTs	8.8
	315707	AI418055	Hs.161160	ESTs	5.1
	315714	AA744015	Hs.298138	EST cluster (not in UniGene)	6.1
55	315740	TD5558	Hs.156880	EST cluster (not in UniGene)	6.8
	315762	AI391470	Hs.158618	ESTs	6.3
	315769	AA744875	Hs.189413	ESTs	5
	315843	AA678430	Hs.191897	ESTs	5.7
	315990	AI800041	Hs.190555	ESTs	9.2
60	316012	AA764950	Hs.119898	ESTs	4.3
	316036	AA708016	Hs.190389	ESTs	5.9
	316055	AA693880	Hs.6947	EST cluster (not in UniGene)	6.7
	316074	AW517542	Hs.293273	ESTs	5.5
	316100	AW203986	Hs.213003	ESTs	5.1
65	316169	AI127483	Hs.120451	ESTs	8.2
	316442	AA760894	Hs.153023	ESTs	17.1
	316491	AA768025	Hs.186854	EST	4.6
	316504	AW135854	Hs.132458	ESTs	4.3
	316667	AW015940	Hs.232234	ESTs	7.6

	316854	AA831215	Hs.159066	ESTs; Weakly similar to predicted using	5.1
	316905	AW138241	Hs.210846	ESTs	6.4
	317008	AW051597	Hs.143707	ESTs	4.4
5	317019	AA864968	Hs.127699	ESTs	11
	317194	AW445167	Hs.126036	ESTs	13.5
	317224	D56760	Hs.93029	ESTs	8.7
	317404	AI806857	Hs.128594	ESTs	8.7
	317501	AA931245	Hs.137097	ESTs	11.1
	317548	AI654187	Hs.195704	ESTs	14.2
10	317651	AW292779	Hs.169799	ESTs	5.8
	317758	AI733277	Hs.128321	ESTs	5.4
	317850	N29974	Hs.152982	EST cluster (not in UniGene)	11.4
	317869	AW295184	Hs.129142	ESTs; Weakly similar to DEOXYRIBONUCLEAS	13.8
15	317902	AI828602	Hs.211265	ESTs	5.3
	317916	AI585071	Hs.159983	ESTs	7.7
	318239	AI085198	Hs.164228	ESTs	13.1
	318268	AI817736	Hs.182490	ESTs	6.2
	318327	AW294013	Hs.200942	ESTs	4.6
20	318363	R45530	Hs.1440	gamma-aminobutyric acid (GABA) A recepto	6
	318428	AI949409	Hs.194591	ESTs	12.3
	318464	AI151010	Hs.157774	ESTs	4.3
	318524	AW291511	Hs.159066	ESTs	25.9
	318540	T30280	Hs.274803	EST cluster (not in UniGene)	7
25	318591	AW206808	Hs.115325	ESTs	4.8
	318615	AI133617	Hs.10177	ESTs	6.5
	318646	AW175665	Hs.278695	ESTs	5.7
	318667	AI493742	Hs.165210	ESTs	11
	318668	W26276	Hs.136075	ESTs	5.9
30	318753	AA578265	Hs.7130	copine IV	5.5
	319080	Z45131	Hs.23023	ESTs	16.9
	319181	F06504	Hs.27384	EST cluster (not in UniGene)	4.8
	319191	AF071538	Hs.79414	prostate epithelium-specific Ets transcr	6.6
	319233	R21054	Hs.180532	ESTs	4.9
35	319586	D78808	Hs.283683	ESTs	8.2
	319750	AA621806	Hs.117956	ESTs	9.3
	319763	AA460775	Hs.6295	ESTs	14.3
	319824	AA424266	Hs.123642	EST cluster (not in UniGene)	12.8
	319838	AA337642	Hs.95262	nuclear factor related to kappa B bindin	5.1
40	319913	AA178304	Hs.271586	ESTs; Moderately similar to IIII ALU SUB	4.3
	319964	T80579	Hs.290270	ESTs	5.8
	320076	AI653733	Hs.271593	ESTs	8.5
	320102	AW296219	Hs.115325	RAB7; member RAS oncogene family-like 1	9.8
	320187	T99949	Hs.303428	EST cluster (not in UniGene)	9.8
45	320211	AL039402	Hs.125783	DEME-6 protein	7.9
	320324	AF071202	Hs.139336	ATP-binding cassette; sub-family C (CFTR	58.2
	320455	R49889	Hs.24144	EST cluster (not in UniGene)	8.3
	320464	AI089817	Hs.237146	ESTs	5.4
	320561	NM_006953	Hs.159330	EST cluster (not in UniGene)	7
50	320574	AL049443	Hs.161283	Homo sapiens mRNA; cDNA DKFZp586N2020 (f	14.4
	320576	AL049977	Hs.162209	Homo sapiens mRNA; cDNA DKFZp564C122 (fr	6.7
	320654	AW263086	Hs.118112	ESTs	6
	320796	AF038966	Hs.31218	secretory carrier membrane protein 1	13.5
	320800	AI681006	Hs.71721	ESTs	6.2
55	320813	AW360847	Hs.16578	ESTs	9.3
	320853	AI473796	Hs.135904	ESTs	8.1
	320856	D59945	Hs.65386	EST cluster (not in UniGene)	6
	320899	AA633772	Hs.116798	ESTs	9.2
	320918	AW195012	Hs.293970	ESTs	5
	320973	H19732	Hs.247917	ESTs	5.9
60	321099	AA018386	Hs.64341	ESTs	4.6
	321180	H52462	Hs.163872	EST cluster (not in UniGene)	5.8
	321318	AB033041	Hs.137507	EST cluster (not in UniGene)	8.4
	321382	AW372449	Hs.175982	EST cluster (not in UniGene)	7.3
	321441	AW297633	Hs.118498	ESTs	14.7
65	321538	H80483	Hs.46903	EST cluster (not in UniGene)	9.2
	321609	H66021	Hs.162538	ESTs; Weakly similar to hMmTRA1b [H.sapi	4.8
	321636	AI791838	Hs.183465	ESTs	5.5
	321638	AI356352	Hs.108932	ESTs	4.6
	321644	AI204177	Hs.237396	ESTs	6.6



	321681	AA233821	Hs.190173	EST cluster (not in UniGene)	4.6
	321726	X91221	Hs.144465	EST cluster (not in UniGene)	5
	321758	U29112	Hs.198151	EST cluster (not in UniGene)	6.2
5	321877	AL109784	Hs.189222	EST cluster (not in UniGene)	4.6
	321899	N55158	Hs.29468	ESTs	4.6
	321902	AA746374	Hs.145010	ESTs	8.2
	322007	AW410646	Hs.164649	ESTs	5.1
	322055	AL137646	Hs.146001	EST cluster (not in UniGene)	4.3
	322092	AF085833	Hs.135624	EST cluster (not in UniGene)	4.3
10	322221	AI890619	Hs.179662	nucleosome assembly protein 1-like 1	4.4
	322278	AF086283		EST cluster (not in UniGene)	5.8
	322303	W07459	Hs.157601	EST cluster (not in UniGene)	22
	322437	AW393804	Hs.170253	ESTs; Weakly similar to rabaptin-4 [H.s]	4.4
	322493	AF143235	Hs.279819	EST cluster (not in UniGene)	7.2
15	322782	AA050600	Hs.202577	EST cluster (not in UniGene)	18.4
	322811	AA782292	Hs.105872	ESTs	6.9
	322818	AW043782	Hs.293618	ESTs	10.7
	322826	AI807883	Hs.180059	ESTs	5
	322887	AI986306	Hs.86149	ESTs; Weakly similar to KIAA0869 protein	11.9
20	322889	AA081924	Hs.124918	ESTs	7.1
	322924	AA669253	Hs.136075	ESTs	4.5
	322982	AI351191	Hs.128430	ESTs	6.6
	322994	AA422116	Hs.191461	ESTs	4.7
	323040	AA336609	Hs.10862	ESTs	6.9
25	323041	AL118747	Hs.26691	EST cluster (not in UniGene)	8.3
	323045	AA148950	Hs.188836	ESTs	4.6
	323048	AL118923	Hs.175110	EST cluster (not in UniGene)	7.5
	323070	AA157726	Hs.264330	ESTs	7.5
	323071	AA157867	Hs.5722	ESTs	4.7
30	323097	Z44354	Hs.286261	guanine nucleotide binding protein (G pr	4.9
	323131	AA176982	Hs.270124	EST cluster (not in UniGene)	8.1
	323136	AL120351	Hs.30177	EST cluster (not in UniGene)	4.3
	323175	AI827137	Hs.336454	ESTs	6.2
35	323218	AF131846	Hs.13396	Homo sapiens clone 25028 mRNA sequence	6.3
	323226	AF055019	Hs.21906	Homo sapiens clone 24670 mRNA sequence	12.6
	323236	AA363148	Hs.293960	ESTs	10.9
	323262	AI829770	Hs.180642	ESTs	7.6
	323276	AA838452	Hs.323822	ESTs	7.6
	323287	AA639902	Hs.104215	ESTs	24.7
40	323335	AI855499	Hs.161712	ESTs	14.1
	323341	AL134875	Hs.108646	ESTs	5.3
	323362	AL135067	Hs.117182	ESTs	6.1
	323486	C05278	Hs.289221	ESTs; Moderately similar to [PYRUVATE DE	8.5
	323496	AI826801	Hs.300700	ESTs	4.5
45	323507	H71721	Hs.128387	ESTs	4.4
	323545	AI814405	Hs.224569	ESTs	5.8
	323623	AA314280	Hs.146589	EST cluster (not in UniGene)	5
	323663	AW263526	Hs.243023	ESTs	7.7
	323691	AA317581	Hs.145599	EST cluster (not in UniGene)	5.9
50	323810	AA740405	Hs.108806	ESTs	6.2
	323846	AA337621	Hs.137635	ESTs	6
	323929	AA354940	Hs.145958	ESTs	10.7
	323959	AI636775	Hs.6831	ESTs	5.4
	323996	AA367032	Hs.217882	ESTs	5.8
55	323997	AA844907	Hs.274454	EST cluster (not in UniGene)	4.4
	324019	AW177009		EST cluster (not in UniGene)	4.6
	324130	AL046575	Hs.130198	ESTs	11
	324295	AI146586	Hs.143691	ESTs	13.7
	324296	AI524039	Hs.182524	ESTs	6.8
60	324307	AA627642	Hs.4994	transducer of ERBB2; 2 (TOB2)	4.9
	324330	AA884766		EST cluster (not in UniGene)	4.3
	324385	F28212	Hs.284247	EST cluster (not in UniGene)	4.7
	324430	AA464018	Hs.184598	EST cluster (not in UniGene)	13.6
	324452	AW014022	Hs.170953	ESTs	7.6
65	324547	AW501974	Hs.74170	ESTs	5.6
	324603	AW016378	Hs.292934	ESTs	24.2
	324617	AA508552	Hs.195839	ESTs	54
	324618	AI346282	Hs.87159	ESTs	4.6
	324620	AA448021	Hs.94109	EST cluster (not in UniGene)	5.7

	324626	AI685464	ESTs	9	
	324658	AI694767	Hs.129179 ESTs	22	
	324676	AW503943	Hs.112451 ESTs	4.9	
5	324691	AI217963	Hs.293341 ESTs; Weakly similar to Pro-a2(XI) [H.sa	10.6	
	324696	AA641082	Hs.257339 ESTs	10.2	
	324713	AW340249	Hs.163440 ESTs	5.5	
	324715	AI739168	Hs.131798 EST cluster (not in UniGene)	7.2	
	324718	AI557019	Hs.116467 ESTs	34.4	
10	324720	AA578904	Hs.292437 ESTs	4.8	
	324752	AI278919	Hs.272072 ESTs; Moderately similar to III ALU SUB	7.9	
	324753	AA612626	Hs.144871 EST cluster (not in UniGene)	5.2	
	324790	AI334367	Hs.159337 ESTs	7.6	
	324801	AI819924	Hs.14553 ESTs	12.6	
	324804	AI692552	ESTs	6.5	
15	324845	AA361016	Hs.337533 ESTs	4.5	
	324888	AI564134	Hs.136102 KIAA0853 protein	4.4	
	324929	AI741833	Hs.125350 ESTs	6.5	
	324961	AA613792	EST cluster (not in UniGene)	5.1	
	325108	AA401863	Hs.22380 ESTs	7.1	
20	326816		CH.20_hs gi 6552458	9.6	
	326997		CH.21_hs gi 5867660	4.8	
	327098		CH.21_hs gi 6682516	4.3	
	328492		CH.07_hs gi 5868455	5.8	
	329362		CH.X_hs gi 5868837	4.3	
25	329929		CH.16_p2 gi 6165201	5.5	
	329960		CH.16_p2 gi 5091594	7.8	
	330020		CH.16_p2 gi 6671887	6	
	330211		CH.05_p2 gi 6013592	12.6	
30	330384	M23263	androgen receptor (dihydrotestosterone r	9	
	330430	HG2261-HT2352	Hs.321110	Antigen, Prostate Specific, Alt. Splice	13.8
	330546	U31382	Hs.299867 guanine nucleotide binding protein 4	6	
	330551	U39840	hepatocyte nuclear factor 3; alpha	4.9	
	330658	AA319514	Hs.30732 ESTs	6	
35	330700	AA037415	Hs.20999 ESTs	5.5	
	330704	AA056557	Hs.6759 ESTs	5.1	
	330705	AA102571	Hs.157078 ESTs	11.7	
	330706	AA121140	Hs.177576 ESTs; Moderately similar to kynurenine a	14.5	
	330712	AA167269	Hs.52620 ESTs	5	
40	330725	AA252033	Hs.24052 ESTs; Weakly similar to III ALU SUBFAM	7.2	
	330732	AA281092	Hs.35254 ESTs	4.9	
	330762	AA449677	Hs.15251 Human DNA sequence from clone 437M21 on	18.5	
	330763	AA450200	Hs.143187 FK506-binding protein 3 (25kD)	4.3	
	330772	AA479114	Hs.11356 ESTs	5.8	
45	330786	D60374	EST	4.6	
	330892	AA149579	Hs.91202 ESTs	15.3	
	330949	H01458	Hs.142896 ESTs	10.3	
	330977	H20826	Hs.315181 ESTs	4.4	
	331017	N24619	Hs.108920 ESTs	11.8	
50	331099	R36671	Hs.14846 ESTs	11.6	
	331128	R51361	Hs.268714 ESTs	4.8	
	331151	R82331	Hs.268838 ESTs	13	
	331195	T64447	Hs.168439 ESTs	4.9	
	331320	AA262999	Hs.300141 ESTs	4.8	
55	331321	AA278355	Hs.87929 ESTs	6.1	
	331337	AA267662	Hs.118630 ESTs	9.2	
	331348	AA400596	Hs.88143 ESTs	9.9	
	331359	AA416979	Hs.81897 ESTs	4.3	
	331383	AA454543	Hs.43543 ESTs	4.6	
60	331422	F10802	Hs.237339 ESTs; Moderately similar to III ALU SUB	4.9	
	331442	H77381	Hs.41223 ESTs	7.5	
	331466	N21680	Hs.43455 ESTs	5.4	
	331479	N27154	Hs.44076 ESTs	6.5	
	331490	N32912	Hs.291039 ESTs; Weakly similar to hypothetical 43.	12.5	
65	331493	N34357	Hs.93817 ESTs	4.6	
	331561	N62780	Hs.48703 ESTs	9.2	
	331615	N92352	Hs.5472 ESTs	4.6	
	331659	W48868	Hs.334305 ESTs	8.7	
	331696	Z38907	Hs.65949 KIAA0888 protein	10.3	
	331811	AA404500	Hs.187958 ESTs	4.8	

	331848	AA417039	Hs.98268	signal recognition particle 72kD	7.5
	331873	AA429445	Hs.98640	ESTs	6.5
	331889	AA431407	Hs.98802	Homo sapiens Chromosome 16 BAC clone CIT	33.6
5	331967	AA460158	Hs.99589	KIAA1028 protein	6.8
	331974	AA464518	Hs.105322	ESTs	5.3
	332043	AA490831	Hs.201591	ESTs	10.8
	332076	AA599477	Hs.291156	ESTs	4.4
	332173	F09281	Hs.100725	ESTs	5.5
	332247	N58172		ESTs	14.2
10	332249	N62096	Hs.194140	ESTs	7.2
	332325	T79428	Hs.339667	ESTs	5.6
	332396	AA340504		ESTs; Weakly similar to simlarto human	21.2
	332434	N75542	Hs.237731	transcription factor 4	15.3
	332493	N95495	Hs.56729	ESTs; Highly similar to GTP-binding prot	7.1
15	332522	L38503	Hs.178357	glutathione S-transferase theta 2	6.6
	332526	AA281753	Hs.17731	inositol 1,4,5-triphosphate receptor; ty	5.8
	332530	M31682	Hs.19280	inhibin; beta B (activin AB beta polypep	5.5
	332533	M99487	Hs.325825	folate hydrolase (prostate-specific memb	38.1
	332538	N48715	Hs.20991	ESTs	6.5
20	332546	D84454	Hs.22587	solute carrier family 35 (UDP-galactose	4.8
	332594	AA279313	Hs.32951	methyl CpG binding protein 2	5.6
	332610	AA412405	Hs.40513	ESTs; Weakly similar to BETA GALACTOSIDA	5.6
	332661	N95742	Hs.6390	ESTs	6.9
	332697	T94885	Hs.75725	carboxypeptidase E	24.3
25	332712	D26070	Hs.79306	inositol 1,4,5-triphosphate receptor; ty	9.9
	332716	L00058	Hs.79630	v-myc avian myelocytomatosis viral oncog	5.6
	332726	R72029	Hs.83428	synaptophysin-like protein	5
	332781	AA233258		ESTs; Weakly similar to D1007.5 [C.elega	4.5
30	332797		CH22_FGENES.6_2		30.8
	332798		CH22_FGENES.6_5		68.8
	332799		CH22_FGENES.6_6		19.8
	332933		CH22_FGENES.38_7		5.6
	332980		CH22_FGENES.54_1		5.5
	332984		CH22_FGENES.54_6		4.9
35	333168		CH22_FGENES.94_1		4.7
	333169		CH22_FGENES.94_2		4.4
	333452		CH22_FGENES.157_1		4.8
	333456		CH22_FGENES.157_5		4.3
	333458		CH22_FGENES.157_7		4.6
40	333611		CH22_FGENES.217_6		4.7
	333621		CH22_FGENES.219_5		5.5
	333814		CH22_FGENES.282_2		7.1
	333849		CH22_FGENES.290_8		6.2
	333949		CH22_FGENES.303_6		4.3
45	333951		CH22_FGENES.303_7		4.9
	333955		CH22_FGENES.303_11		5.6
	334150		CH22_FGENES.339_1		5.1
	334223		CH22_FGENES.360_4		20.3
	334297		CH22_FGENES.372_3		9.4
50	334443		CH22_FGENES.387_2		4.6
	334444		CH22_FGENES.387_4		5.6
	334447		CH22_FGENES.387_7		13.1
	334570		CH22_FGENES.405_11		5.4
	334749		CH22_FGENES.427_1		5.3
55	334777		CH22_FGENES.430_9		4.7
	334960		CH22_FGENES.465_29		5.2
	335179		CH22_FGENES.504_9		8.8
	335293		CH22_FGENES.527_6		4.7
	335550		CH22_FGENES.576_11		5.1
60	335581		CH22_FGENES.581_19		5.7
	335586		CH22_FGENES.581_25		4.3
	335809		CH22_FGENES.617_6		6.2
	335810		CH22_FGENES.617_7		5.8
	335822		CH22_FGENES.619_7		7.1
65	335824		CH22_FGENES.619_11		8.5
	335853		CH22_FGENES.626_6		4.3
	335886		CH22_FGENES.632_4		4.3
	336034		CH22_FGENES.678_5		6.8
	336441		CH22_FGENES.827_7		7.6

	336624	CH22_FGENES.6-3	43.3
	336625	CH22_FGENES.6-4	37.9
	336679	CH22_FGENES.43-7	5.3
	337577	CH22_C65E1.GENSCAN.8-1	4.9
5	338255	CH22_EM:AC005500.GENSCAN.276-3	13.4
	338260	CH22_EM:AC005500.GENSCAN.279-10	4.6
	338561	CH22_EM:AC005500.GENSCAN.421-5	4.6
	338562	CH22_EM:AC005500.GENSCAN.421-6	4.3
	338759	CH22_EM:AC005500.GENSCAN.517-8	5.1
10	338763	CH22_EM:AC005500.GENSCAN.517-16	5.5
	338764	CH22_EM:AC005500.GENSCAN.517-17	7.1

**TABLE 3A** shows the accession numbers for those primekeys lacking unigeneID's for Table 3. For each probeset we have listed the gene cluster number from which the oligonucleotides were designed. Gene clusters were compiled using sequences derived from Genbank ESTs and mRNAs. These sequences were clustered based on sequence similarity using Clustering and Alignment Tools (DoubleTwist, Oakland California). The Genbank accession numbers for sequences comprising each cluster are listed in the "Accession" column.

10	Pkey:	Unique Eos probeset identifier number	
	CAT number:	Gene cluster number	
	Accession:	Genbank accession numbers	
15	Pkey	CAT number	Accession
	123619	371681_1	AA602964 AA609200
	116722	143512_1	Z24878 AA494098 F13654 AA494040 AA143127
	103677	41847_1	Z83806 AJ132091 AJ132090
20	125992	1589048_1	H48372 W01626
	109342	genbank_AA213620	AA213620
	125154	genbank_W38419	W38419
	101447	entrez_M21305	M21305
	124357	genbank_N22401	N22401
25	108910	genbank_AA136590	AA136590
	322278	47271_1	W69304 AF086283 W69200
	315084	350959_1	AI821085 AW973484 AA554802 AI821831 AA657438 AA640756 AA650339
	324019	262792_1	AW177009 AI381610
	324330	300543_1	AA884766 AW974271 AA592975 AA447312
30	324626	336411_1	AI685464 AW971336 AA513587 AA525142
	303029	37699_1	AF199613 AF108756
	324804	398093_1	AI692552 AI393343 AI800510 AI377711 F24263 AA661876
	324961	376239_1	AA613792 AW182329 T05304 AW858385
	329362	c_x_hs	
35	336624	CH22_4071FG_6_3_	
	336625	CH22_4072FG_6_4_	
	336879	CH22_4157FG_43_7_	
	338255	CH22_6856FG_LINK_EM:AC00	
	338260	CH22_6863FG_LINK_EM:AC00	
40	329929	c16_p2	
	329960	c16_p2	
	338561	CH22_7294FG_LINK_EM:AC00	
	338562	CH22_7295FG_LINK_EM:AC00	
	338759	CH22_7581FG_LINK_EM:AC00	
45	338763	CH22_7585FG_LINK_EM:AC00	
	338764	CH22_7586FG_LINK_EM:AC00	
	333168	CH22_400FG_94_1_LINK_EM:A	
	333169	CH22_401FG_94_2_LINK_EM:A	
	333452	CH22_702FG_157_1_LINK_EM:	
50	333456	CH22_706FG_157_5_LINK_EM:	
	333458	CH22_708FG_157_7_LINK_EM:	
	333611	CH22_872FG_217_6_LINK_EM:	
	333621	CH22_882FG_219_5_LINK_EM:	
	333814	CH22_1083FG_282_2_LINK_EM	
55	333849	CH22_1118FG_290_8_LINK_EM	
	335179	CH22_2515FG_504_9_LINK_EM	
	333949	CH22_1225FG_303_5_LINK_EM	
	333951	CH22_1227FG_303_7_LINK_EM	
	333955	CH22_1231FG_303_11_LINK_E	
60	335293	CH22_2635FG_527_6_LINK_EM	
	326816	c20_hs	
	326997	c21_hs	
	335550	CH22_2905FG_576_11_LINK_E	
	335581	CH22_2938FG_581_19_LINK_E	
65	335586	CH22_2944FG_581_25_LINK_E	

	328492	c_7_hs	
	335809	CH22_3181FG_617_6_LINK_EM	
	335810	CH22_3182FG_617_7_LINK_EM	
	335822	CH22_3185FG_619_7_LINK_EM	
5	335824	CH22_3197FG_619_11_LINK_E	
	335853	CH22_3228FG_626_5_LINK_EM	
	335888	CH22_3261FG_632_4_LINK_EM	
	330020	c16_p2	
	330211	c_5_p2	
10	337577	CH22_5864FG_LINK_C65E1.G	
	307848	AI384186	
	332797	CH22_13FG_6_2_LINK_C4G1.G	
	332788	CH22_14FG_6_5_LINK_C4G1.G	
	332799	CH22_15FG_6_6_LINK_C4G1.G	
15	334150	CH22_1428FG_339_1_LINK_EM	
	332833	CH22_154FG_38_7_LINK_C20H	
	332980	CH22_204FG_54_1_LINK_EM:A	
	332984	CH22_208FG_54_6_LINK_EM:A	
	334223	CH22_1507FG_360_4_LINK_EM	
20	334297	CH22_1588FG_372_3_LINK_EM	
	327098	c21_hs	
	334443	CH22_1742FG_387_2_LINK_EM	
	334444	CH22_1743FG_387_4_LINK_EM	
	334447	CH22_1746FG_387_7_LINK_EM	
25	334570	CH22_1875FG_405_11_LINK_E	
	334749	CH22_2061FG_427_1_LINK_EM	
	334777	CH22_2089FG_430_9_LINK_EM	
	336034	CH22_3419FG_678_5_LINK_DJ	
	334960	CH22_2281FG_465_29_LINK_E	
30	336441	CH22_3861FG_827_7_LINK_DJ	
	330551	9851_2	U39840 NM_004496 AW135807 BE087458 BE087567 AA177116 AW195705 AW750756 AI811008 AI694151 BE348594 AW971075 AI347950 AI201455 AI073898 AA652680 AA613671 AI318364 AA507550 AA693692 AI032599 AA991871 AI269801 AW948974 T74639 AA532907 AW949173 BE379594 AI192455 AL039862 AI744012 AI761735 AW243181 AI743687 AI928223 AI423022 AI627855 AI636059 AI651571 AW802044 AI826995 AI431733 AI539125 AA863056 AW270910 AI768930 AW008835 AW615183 AW591147 AI695294 AI672106 AA506358 AI308060 AA011556 AA962437 AI935488 BE218625 AI004356 AW151394 AI218466 N66178 AI419784 AW242519 AW946907 D60374 AA989263 AI698799 AA470460 AI824167 AA669097 AA513815 AA026798 AA676526 AA704429 AA704269 AW118292 AA579216 N58172 AW579842 BE156562 BE156890 BE156489 BE081033 AK001559 BE149402 M85387 AW367811 AW367798 R17370 AI908947 AA382932 R58449 H18732 AA371231 AW962899 AA713530 AW992946 R53463 H11063 AW068542 Z40761 BE176212 BE176155 W23952 W92188 AW374883 AA303497 AW954769 AA036808 BE168063 AW382073 AW382085 AL041475 H80748 AI078161 BE463983 AI805213 AI761264 W94685 N94502 AI623772 AI419532 AI810302 AI634190 AW002516 AW150777 AI352312 AI367474 AW204807 AI675502 AI337026 AW134715 BE328451 AI123157 AI560020 AI300745 AI608631 AI248873 AA742484 AW051635 H18846 AI245045 AA507111 AI640510 AI925594 AA115747 AA143035 AA151106 AK001764 BE313896 AA380189 AA380151 AA194996 AW118089 AA495871 AW975219 AW085598 AU378909 AW992310 AW992409 AI911857 AA657643 AI804471 AI242589 AI623968 R09556 AI129100 AI206500 AA680094 AA677784 AI023178 AI277519 AA424742 AI240654 AA232846 AI804273 AI382376 AA001729 W90790 BE090656 AW295015 AI674596 AI431734 AI420517 AW769185 AI128355 AI192474 AI820001 AA001929 AA706925 AI076676 AI499119 AI200493 AI695919 AI376217 W69195 W69261 AW305099 W90320 BE048357 AI658856 AA838534 AA233258 AI753393 AA709227 AI874387 AI872616
	330786	53973_3	
35			
	332247	372969_1	
40	332396	20265_1	
45			
	332781	32044_1	
50			

**TABLE 3B** shows the genomic positioning for those primekeys lacking unigene ID's and accession numbers in Table 3. For each predicted exon, we have listed the genomic sequence source used for prediction. Nucleotide locations of each predicted exon are also listed.

5

10 Pkey: Unique number corresponding to an Eos probeset  
 Ref: Sequence source. The 7 digit numbers in this column are Genbank Identifier (GI) numbers. "Dunham I. et al." refers to the publication entitled "The DNA sequence of human chromosome 22." Dunham I. et al., Nature (1999) 402:489-495.  
 Strand: Indicates DNA strand from which exons were predicted.  
 Nt\_position: Indicates nucleotide positions of predicted exons.

15	Pkey	Ref	Strand	Nt_position
	333611	Dunham, I. et al.	Plus	6548368-6548507
	333621	Dunham, I. et al.	Plus	8597414-8597560
	333814	Dunham, I. et al.	Plus	7894165-7894252
20	333849	Dunham, I. et al.	Plus	8018323-8018472
	333949	Dunham, I. et al.	Plus	8589634-8589791
	333951	Dunham, I. et al.	Plus	8592501-8592637
	333955	Dunham, I. et al.	Plus	8597414-8597560
	334150	Dunham, I. et al.	Plus	10529221-10529854
	334297	Dunham, I. et al.	Plus	13420934-13421058
25	334443	Dunham, I. et al.	Plus	14288981-14289056
	334444	Dunham, I. et al.	Plus	14306433-14306492
	334447	Dunham, I. et al.	Plus	14308764-14308824
	334570	Dunham, I. et al.	Plus	14994868-14994943
	334777	Dunham, I. et al.	Plus	16259586-16260166
30	335179	Dunham, I. et al.	Plus	21634405-21634526
	335581	Dunham, I. et al.	Plus	24976198-24976334
	335586	Dunham, I. et al.	Plus	24990333-24990497
	335809	Dunham, I. et al.	Plus	26310772-26310909
	335810	Dunham, I. et al.	Plus	26314767-26314849
35	335822	Dunham, I. et al.	Plus	26364087-26364196
	335824	Dunham, I. et al.	Plus	26376860-26376942
	335886	Dunham, I. et al.	Plus	26934235-26934364
	336034	Dunham, I. et al.	Plus	29014404-29014590
40	336441	Dunham, I. et al.	Plus	34187606-34187663
	337577	Dunham, I. et al.	Plus	595377-595678
	338260	Dunham, I. et al.	Plus	15458919-15459257
	332797	Dunham, I. et al.	Minus	216964-216798
	332798	Dunham, I. et al.	Minus	232147-231974
	332799	Dunham, I. et al.	Minus	232421-232307
45	332933	Dunham, I. et al.	Minus	2035790-2035681
	332980	Dunham, I. et al.	Minus	5136165-5136019
	332984	Dunham, I. et al.	Minus	2632606-2632457
	333168	Dunham, I. et al.	Minus	3729896-3729788
	333169	Dunham, I. et al.	Minus	3730864-3730767
50	333452	Dunham, I. et al.	Minus	5136165-5136019
	333456	Dunham, I. et al.	Minus	2631933-2631797
	333458	Dunham, I. et al.	Minus	5143942-5143806
	334223	Dunham, I. et al.	Minus	12734365-12734269
	334749	Dunham, I. et al.	Minus	16090686-16090106
55	334960	Dunham, I. et al.	Minus	20160968-20160785
	335293	Dunham, I. et al.	Minus	22316408-22316275
	335550	Dunham, I. et al.	Minus	24668714-24668658
	335853	Dunham, I. et al.	Minus	26814829-26814506
	336624	Dunham, I. et al.	Minus	227714-227577
60	336625	Dunham, I. et al.	Minus	229124-228024
	336679	Dunham, I. et al.	Minus	2035790-2035681
	338255	Dunham, I. et al.	Minus	15242294-15242231
	338561	Dunham, I. et al.	Minus	22311866-22311856
	338562	Dunham, I. et al.	Minus	22312594-22312465
65	338759	Dunham, I. et al.	Minus	26582475-26582189
	338763	Dunham, I. et al.	Minus	26628148-26628009
	338764	Dunham, I. et al.	Minus	26641232-26641101

	329960	5091594	Minus	1031-1162
	329929	6165201	Minus	156410-156553
	330020	6671887	Plus	172397-172491
	326816	6552458	Plus	198354-198436
5	326997	5867660	Minus	71389-72147
	327098	6682516	Minus	1061684-1062361
	330211	6013592	Plus	59158-59215
	328492	5868455	Minus	46094-46241
10	329362	5868837	Minus	65688-68173



**TABLE 4:** shows a preferred subset of the Accession numbers for genes found in Table 3 which are differentially expressed in prostate tumor tissue compared to normal prostate tissue.

5					
10	Pkey:	Unique Eos probeset identifier number			
	ExAccn:	Exemplar Accession number, Genbank accession number			
	UnigeneID:	Unigene number			
	Unigene Title:	Unigene gene title			
	R1:	Ratio of tumor to normal body tissue			
15	Pkey	ExAccn	UnigeneID	Unigene Title	R1
	100819	HG4020-HT4290Hs.2387		Transglutaminase	10.5
	102698	U75272	Hs.1867	progastricsin (papsinogen C)	10.6
	102869	X02544	Hs.572	orosomucoid 1	22.6
20	105370	AA236476	Hs.22791	ESTs; Weakly similar to transmembrane pr	10.3
	105645	AA282138	Hs.11325	ESTs	14
	106094	AA419461	Hs.23317	ESTs	10.9
	109014	AA156790	Hs.262038	ESTs	15.3
	109562	F01811	Hs.187931	ESTs; Moderately similar to voltage-gate	10.8
	113021	T23855	Hs.129836	KIAA1028 protein	10.8
25	114124	Z38595	Hs.125019	ESTs; Highly similar to KIAA0886 protein	21.3
	122791	AA460158	Hs.129836	KIAA1028 protein	12.4
	124352	N21828	Hs.102406	ESTs	10.2
	301042	AI659131	Hs.197733	ESTs	24.9
	302005	AI869668	Hs.123119	ESTs	36.8
30	302410	NM_004917	Hs.218366	EST cluster (not in UniGene) with exon h	26.8
	302881	AA508353	Hs.105314	relaxin 1 (H1)	78.8
	303344	AA255977	Hs.250646	ESTs; Highly similar to ubiquitin-conjug	19.5
	303753	AW503733	Hs.9414	ESTs	13
	310431	AI420227	Hs.149358	ESTs	72.9
35	311251	AI655662	Hs.197698	ESTs	41.3
	311596	AI682088	Hs.79375	ESTs	26.4
	312153	AA759250	Hs.118825	cytochrome b-561	11
	312521	AA033609	Hs.239884	ESTs	11.2
	313676	AA861697	Hs.120591	EST cluster (not in UniGene)	13.4
40	314171	AI821895	Hs.193481	ESTs	29.4
	314907	AI672225	Hs.222886	ESTs	19.3
	315051	AW282425	Hs.163484	EST	15.5
	315052	AA876910	Hs.134427	ESTs	20
	317548	AI654187	Hs.195704	ESTs	14.2
45	317869	AW295184	Hs.129142	ESTs; Weakly similar to DEOXYRIBONUCLEAS	13.8
	318428	AI949409	Hs.194591	ESTs	12.3
	318524	AW291511	Hs.158068	ESTs	25.9
	319080	Z45131	Hs.23023	ESTs	18.9
	319763	AA460775	Hs.6295	ESTs	14.3
50	320324	AF071202	Hs.139338	ATP-binding cassette; sub-family C (CFTR	56.2
	321441	AW297633	Hs.118498	ESTs	14.7
	322303	W07459	Hs.157601	EST cluster (not in UniGene)	22
	322782	AA056060	Hs.202577	EST cluster (not in UniGene)	18.4
	322818	AW043782	Hs.293616	ESTs	10.7
55	323287	AA639902	Hs.104215	ESTs	24.7
	324603	AW016378	Hs.292934	ESTs	24.2
	324617	AA508552	Hs.185839	ESTs	54
	324658	AI694767	Hs.129179	ESTs	22
	324691	AI217963	Hs.283341	ESTs; Weakly similar to Pro-a2(XI) [H.sa	10.6
60	324696	AA641092	Hs.257339	ESTs	10.2
	324718	AI557019	Hs.116467	ESTs	34.4
	330211		CH.05_p2 gi 6013592		12.6
	330430	HG2261-HT2352	Hs.321110	Antigen, Prostate Specific, Alt. Splice	13.8
	330706	AA121140	Hs.177576	ESTs; Moderately similar to kynurenine a	14.5
65	330762	AA449677	Hs.15251	Human DNA sequence from clone 437M21 on	18.5
	330892	AA149579	Hs.81202	ESTs	15.3
	330949	H01458	Hs.142896	ESTs	10.3

	331099	R36671	Hs.14846	ESTs	11.6
	331151	R82331	Hs.268838	ESTs	13
	331889	AA431407	Hs.98802	Homo sapiens Chromosome 16 BAC clone CIT	33.6
5	332247	N58172		ESTs	14.2
	332396	AA340504		ESTs; Weakly similar to similar to human	21.2
	332533	M99487	Hs.325825	folate hydrolase (prostate-specific memb	38.1
	332697	T94885	Hs.75725	carboxypeptidase E	24.3
	332797			CH22_FGENES.6_2	30.8
	332798			CH22_FGENES.6_5	68.8
10	332799			CH22_FGENES.6_6	19.8
	334223			CH22_FGENES.360_4	20.3
	336624			CH22_FGENES.6-3	43.3
	336625			CH22_FGENES.6-4	37.9

**TABLE 4A** shows the accession numbers for those primekeys lacking unigeneID's for Table 4. For each probeset we have listed the gene cluster number from which the oligonucleotides were designed. Gene clusters were compiled using sequences derived from Genbank ESTs and mRNAs. These sequences were clustered based on sequence similarity using Clustering and Alignment Tools (DoubleTwist, Oakland California). The Genbank accession numbers for sequences comprising each cluster are listed in the "Accession" column.

10	Pkey:	Unique Eos probeset identifier number
	CAT number:	Gene cluster number
	Accession:	Genbank accession numbers
15	<b>Pkey</b>	<b>CAT number</b>
		<b>Accession</b>
	336624	CH22_4071FG_6_3_
	336625	CH22_4072FG_6_4_
	330211	c_5_p2
20	332797	CH22_13FG_6_2_LINK_C4G1.G
	332798	CH22_14FG_6_5_LINK_C4G1.G
	332799	CH22_15FG_6_6_LINK_C4G1.G
	334223	CH22_1507FG_360_4_LINK_EM
25	332247	372969_1
	332396	20265_1
30		AA669097 AA513815 AA026798 AA676526 AA704429 AA704269 AW118292 AA579216 N58172 AW579842 BE156562 BE156690 BE156489 BE081033 AK001559 BE149402 M85387 AW367811 AW367798 R17370 AI908947 AA382932 R58449 H18732 AA371231 AW962899 AA713530 AW892946 R53463 H11063 AW068542 Z40761 BE176212 BE176155 W23952 W92188 AW374883 AA303497 AW954769 AA036808 BE168063 AW382073 AW382085 AL041475 H80748 AJ078161 BE463983 AI805213 AJ761264 W94885 N94502 AI623772 AI419532 AI810302 AI634190 AW002516 AW150777 AI352312 AI367474 AW204807 AI675502 AI337026 AW134715 BE328451 AI123157 AI560020 AI300745 AI608631 AI248873 AA742484 AW051635 H18646 AI245045 AA507111 AI640510 AI825594 AA115747 AA143035 AA151106

**TABLE 4B** shows the genomic positioning for those primekeys lacking unigene ID's and accession numbers in Table 4. For each predicted exon, we have listed the genomic sequence source used for prediction. Nucleotide locations of each predicted exon are also listed.

10	Pkey: Ref: Strand: NT_position:	Unique number corresponding to an Eos probeset Sequence source. The 7 digit numbers in this column are Genbank Identifier (GI) numbers. "Dunham I. et al." refers to the publication entitled "The DNA sequence of human chromosome 22." Dunham I. et al., Nature (1989) 402:489-495. Indicates DNA strand from which exons were predicted. Indicates nucleotide positions of predicted exons.		
15	Pkey	Ref	Strand	NT_position
20	332797 332798 332799 334223 336624 336625 330211	Dunham, I. et al. Dunham, I. et al. Dunham, I. et al. Dunham, I. et al. Dunham, I. et al. Dunham, I. et al. 6013592	Minus Minus Minus Minus Minus Minus Plus	216964-216798 232147-231974 232421-232307 12734365-12734269 227714-227577 228124-228024 59158-59215

**TABLE 5: 1170 GENES UP-REGULATED IN PROSTATE CANCER COMPARED TO NORMAL ADULT TISSUES**

- 5 Table 5 shows 1170 genes up-regulated in prostate cancer compared to normal adult tissues. These were selected from 59680 probesets on the Affymetrix/Eos Hu03 GeneChip array such that the ratio of "average" prostate cancer to "average" normal adult tissues was greater than or equal to 3.44. The "average" prostate cancer level was set to the 85<sup>th</sup> percentile amongst 73 prostate cancers. The "average" normal adult tissue level was set to the 85<sup>th</sup> percentile amongst 162 non-malignant tissues. In order to remove gene-specific background levels of non-specific hybridization, the 7.5<sup>th</sup> percentile value amongst the 162 non-malignant tissues was subtracted from both the numerator and the denominator before the ratio was evaluated.

15	Pkey:	Unique Eos probeset identifier number			
	ExAccn:	Exemplar Accession number, Genbank accession number			
	UnigeneID:	Unigene number			
	Unigene Title:	Unigene gene title			
	R1:	Ratio of tumor to normal tissue			
20	Pkey	ExAccn	UnigeneID	Unigene Title	R1
	446057	AI420227	Hs.149358	ESTs, Weakly similar to A46010 X-linked	86.42
	400302	N48056	Hs.1915	folate hydrolase (prostate-specific memb	68.48
	414569	AF109298	Hs.118258	prostate cancer associated protein 1	58.36
25	417407	AA923278	Hs.290905	ESTs, Weakly similar to protease [H.sapi	56.16
	431579	AW971082	Hs.222888	ESTs, Weakly similar to TRHY_HUMAN TRICH	53.38
	409361	NM_005982	Hs.54416	sine oculis homeobox (Drosophila) homolo	48.28
	409731	AA125985	Hs.56145	thymosin, beta, identified in neuroblast	45.24
	400298	AA032279	Hs.61635	six transmembrane epithelial antigen of	43.48
30	420154	AI093155	Hs.95420	JM27 protein	41.12
	433466	AA508353	Hs.105314	relaxin 1 (H1)	39.88
	400296	AA305627	Hs.139336	ATP-binding cassette, sub-family C (CFTR	38.42
	400292	AA250737	Hs.72472	ESTs	38.00
	432887	AI928047	Hs.162859	ESTs	36.48
35	439176	AI448444	Hs.190394	ESTs, Weakly similar to B28096 line-1 pr	36.45
	430722	AW988543	Hs.203270	ESTs, Weakly similar to ALU1_HUMAN ALU S	33.20
	437052	AA861697	Hs.120591	ESTs	33.02
	418396	AI765805	Hs.26691	ESTs	32.68
	434036	AI659131	Hs.197733	hypothetical protein MGC2849	32.44
40	407709	AA456135	Hs.23023	ESTs	32.10
	426747	AA535210	Hs.171995	kallikrein 3, (prostate specific antigen	31.80
	407168	R45175		ESTs	31.72
	440260	AI972867	Hs.7130	copine IV	30.52
	421513	X00949	Hs.105314	relaxin 1 (H1)	30.10
45	416370	N90470	Hs.203697	ESTs, Weakly similar to I38022 hypothei	29.68
	407122	H20276	Hs.31742	ESTs	29.24
	400287	S39329	Hs.181350	kallikrein 2, prostatic	28.90
	432244	AI669973	Hs.200574	ESTs	28.74
	451939	U80456	Hs.27311	single-minded (Drosophila) homolog 2	28.74
50	415989	AI267700	Hs.111128	ESTs	28.34
	418961	AW967646	Hs.23023	ESTs	27.34
	425628	NM_004476	Hs.1915	folate hydrolase (prostate-specific memb	27.32
	458509	AA654650	Hs.282906	ESTs	27.24
	448290	AK002107	Hs.20843	Homo sapiens cDNA FLJ11245 fis, clone PL	27.16
55	428336	AA503115	Hs.183752	microseminoprotein, beta-	26.17
	450096	AI682088	Hs.223368	holocarboxylase synthetase (biotin-prop	25.60
	400299	X07730	Hs.171995	kallikrein 3, (prostate specific antigen	24.91
	437571	AA760894	Hs.153023	ESTs	24.74
	453160	AI263307	Hs.146228	H2B histone family, member L	24.66
60	453096	AW294631	Hs.11325	ESTs	24.46
	425075	AA506324	Hs.1852	acid phosphatase, prostate	24.23
	407202	N58172	Hs.109370	ESTs	24.18

	424846	AU077324	Hs.1832	neuropeptide Y	23.57
	453370	AI470523	Hs.182356	ATP-binding cassette, sub-family C (CFTR	23.16
	422805	AA436989	Hs.121017	H2A histone family, member A	22.52
	444917	R68651	Hs.144997	ESTs	22.26
5	408826	AF216077	Hs.48376	Homo sapiens clone HB-2 mRNA sequence	22.02
	413597	AW302885	Hs.117183	ESTs	21.76
	426429	X73114	Hs.169849	myosin-binding protein C, slow-type	21.32
	435881	H74319	Hs.188620	ESTs	21.12
	432956	AA650114		ESTs	21.07
10	418848	AI820961	Hs.183465	ESTs	21.06
	405685				20.90
	443271	BE568568	Hs.195704	ESTs	19.88
	418819	AA228776	Hs.191721	ESTs	19.94
	420757	X78592	Hs.99915	androgen receptor (dihydrotestosterone r	19.72
15	418994	AA296520	Hs.89546	selectin E (endothelial adhesion molecu	19.56
	428918	AW873985	Hs.119383	ESTs	19.04
	415539	AI733881	Hs.72472	ESTs	18.43
	450382	AA397658	Hs.60257	Homo sapiens cDNA FLJ13598 fis, clone PL	18.34
	418829	AA516531	Hs.55999	NK homeobox (Drosophila), family 3, A	18.28
20	429984	AL050102	Hs.227209	hypothetical protein FLJ21617	17.82
	443822	AI087412	Hs.143811	ESTs, Weakly similar to 2004399A chromos	17.66
	431676	AI685464	Hs.292638	gb:tt88f04.x1 NCL_CGAP_Pr28 Homo sapiens	17.64
	410330	AW023630	Hs.46786	ESTs	17.52
	432441	AW292425	Hs.163484	ESTs	17.41
25	452782	AB037765	Hs.30652	KIAA1344 protein	17.39
	445472	AB006631	Hs.12784	Homo sapiens mRNA for KIAA0293 gene, par	17.00
	414565	AA502972	Hs.183390	hypothetical protein FLJ13590	16.82
	430487	D87742	Hs.241552	KIAA0268 protein	16.72
	431716	D89053	Hs.268012	fatty-acid-Coenzyme A ligase, long-chain	16.60
30	419538	AA603305		gb:np12d11.s1 NCL_CGAP_Pr3 Homo sapiens	16.50
	439677	R82331	Hs.164599	ESTs	16.46
	449625	NM_014253	Hs.23796	odc (odd Oz/ten-m, Drosophila) homolog 1	16.32
	408430	S79876	Hs.44926	dipeptidylpeptidase IV (CD26, adenosine	16.28
	447033	AI357412	Hs.157601	ESTs	16.02
35	453006	AI382575	Hs.167133	ESTs	15.74
	431474	AL133990	Hs.190642	ESTs	15.70
	420218	AW958037	Hs.22437	ribosomal protein L4	15.64
	408000	L11690	Hs.620	bullous pemphigoid antigen 1 (230/240kD)	15.54
40	416208	AW291168	Hs.41295	ESTs, Weakly similar to MUC2_HUMAN MUCIN	15.48
	430226	BE245562	Hs.2551	adrenergic, beta-2-, receptor, surface	15.40
	415263	AA948033	Hs.130853	ESTs	15.38
	432437	W07088	Hs.293685	ESTs	15.28
	428398	AI249368	Hs.98558	ESTs	15.21
	428900	AA460421	Hs.30875	ESTs	14.90
45	449156	AF103907	Hs.171353	prostate cancer antigen 3	14.89
	411096	U80034	Hs.68583	mitochondrial intermediate peptidase	14.81
	435974	U29690	Hs.37744	Homo sapiens beta-1 adrenergic receptor	14.76
	444484	AK002126	Hs.11260	hypothetical protein FLJ11264	14.76
	422728	AW937826	Hs.103262	ESTs, Weakly similar to ZN91_HUMAN ZINC	14.60
50	418601	AA279490	Hs.86368	calmegin	14.56
	448999	AF179274	Hs.22791	transmembrane protein with EGF-like and	14.55
	445885	AI734009	Hs.127699	KIAA1603 protein	14.44
	452712	AW838616		gb:RC5-LT0054-140200-013-D01 LT0054 Homo	14.22
55	432189	AA527841		gb:nh30c04.s1 NCL_CGAP_Pr3 Homo sapiens	14.12
	424565	AW102723	Hs.75295	guanylate cyclase 1, soluble, alpha 3	13.78
	429280	AF203032	Hs.198760	neurofilament, heavy polypeptide (200kD)	13.57
	419264	AA877104	Hs.293672	ESTs, Weakly similar to ALUB_HUMAN !!!!	13.40
	416445	AL043004	Hs.300678	KIAA0135 protein	13.32
	407275	AI364186		gb:qw34h07.x1 NCL_CGAP_U4 Homo sapiens	13.24
60	408369	R38438	Hs.182575	solute carrier family 15 (H+/peptide tra	13.21
	446720	AI439136	Hs.140546	ESTs	13.06
	434988	AI418055	Hs.161160	ESTs	13.02
	448172	N75276	Hs.135904	ESTs	12.98
	416182	NM_004354	Hs.79069	cyclin G2	12.94
65	420544	AA677577	Hs.98732	Homo sapiens Chromosome 16 BAC clone CIT	12.79
	445413	AA151342	Hs.12677	CGI-147 protein	12.64
	452588	AA889120	Hs.110637	homeo box A10	12.62
	407819	R42185	Hs.274803	ESTs	12.60
	433444	AW975324	Hs.129816	ESTs	12.60

	421059	AI654133	Hs.30212	thyroid receptor interacting protein 15	12.30
	420077	AW512260	Hs.87767	ESTs	12.24
	453930	AA419466	Hs.36727	hypothetical protein FLJ10903	12.22
5	441610	AW576148	Hs.148376	ESTs	12.20
	451009	AA013140	Hs.115707	ESTs	12.18
	433764	AW753676	Hs.39982	ESTs	12.16
	440286	U29589	Hs.7138	cholinergic receptor, muscarinic 3	12.04
	443912	R37257	Hs.184780	ESTs	11.92
	419526	AI821895	Hs.193481	ESTs	11.91
10	423073	BE252922	Hs.123119	MAD (mothers against decapentaplegic, Dr	11.87
	452784	BE463857	Hs.151258	hypothetical protein FLJ21062	11.86
	414422	AA147224	Hs.71814	ESTs	11.76
	450203	AF097994	Hs.301528	L-kynurenine/alpha-aminoadipate aminotra	11.88
	436679	AI127483	Hs.120451	ESTs, Weakly similar to unnamed protein	11.60
15	440901	AA090358	Hs.128612	ESTs	11.60
	448045	AI297436	Hs.20166	prostate stem cell antigen	11.51
	433887	AW204232	Hs.279522	ESTs	11.50
	434980	AW770553	Hs.293640	sterol O-acyltransferase (acyl-Coenzyme	11.38
	425905	AB032959	Hs.161700	novel C3HC4 type Zinc finger (ring finger	11.33
20	434680	T11738	Hs.127574	ESTs	11.32
	449650	AF055575	Hs.297647	calcium channel, voltage-dependent, L ty	11.18
	431173	AW971198	Hs.294068	ESTs	11.16
	434539	AW748078	Hs.214410	ESTs, Weakly similar to MUC2_HUMAN MUCIN	11.16
	410037	AB020725	Hs.58009	KIAA0918 protein	11.14
25	417708	N74382	Hs.50495	ESTs	11.14
	458332	AI000341	Hs.220491	ESTs	11.12
	420381	D50640	Hs.301782	phosphodiesterase 3B, cGMP-inhibited	11.10
	425665	AK001050	Hs.159066	hypothetical protein FLJ10188	11.08
	425710	AF030880	Hs.159275	solute carrier family, member 4	11.08
30	428728	NM_016625	Hs.191381	hypothetical protein	11.04
	407021	U52077		gb:Human mariner1 transposase gene, comp	11.02
	410733	D84284	Hs.66052	CD38 antigen (p45)	11.02
	401714				10.90
	434485	AI623511	Hs.118567	ESTs	10.89
35	415786	AW419196	Hs.257924	hypothetical protein FLJ13782	10.87
	452340	NM_002202	Hs.505	ISL1 transcription factor, LIM/homeodoma	10.85
	453628	AW243307	Hs.170187	hypothetical protein	10.72
	408063	BE086548	Hs.42346	calcineurin-binding protein calcisarcin-1	10.67
	417687	AI828596	Hs.250691	ESTs	10.64
40	434666	AF151103	Hs.112259	T cell receptor gamma locus	10.53
	432374	W68815	Hs.301885	Homo sapiens cDNA FLJ11346 fis, clone PL	10.50
	428819	AL135623	Hs.193914	KIAA0575 gene product	10.48
	413409	AI638418	Hs.21745	DEAD/H (Asp-Glu-Ala-Asp/His) box polypep	10.44
	426775	AA434579	Hs.143891	ESTs	10.21
45	436556	AI364997	Hs.7572	ESTs	10.20
	441690	R81733	Hs.33106	ESTs	10.14
	419852	AW503756	Hs.285184	hypothetical protein dJ551D2.5	10.10
	421991	NM_014918	Hs.110488	KIAA0990 protein	10.04
	423698	AA329796	Hs.1098	DKFZp434J1813 protein	10.02
50	452039	AI922888	Hs.172510	ESTs	10.00
	433043	W57554	Hs.125019	ESTs	9.98
	433927	AI557019	Hs.116467	small nuclear protein PRAC	9.97
	445424	AB028945	Hs.12696	cortactin SH3 domain-binding protein	9.96
55	432240	AI694767	Hs.129179	Homo sapiens cDNA FLJ13581 fis, clone PL	9.88
	433104	AL043002	Hs.128246	ESTs, Moderately similar to unnamed prot	9.84
	452744	AI267652	Hs.30504	Homo sapiens mRNA; cDNA DKFZp434E082 (fr	9.82
	431217	NM_013427	Hs.250830	Rho GTPase activating protein 6	9.75
	427398	AW390020	Hs.20415	chromosome 21 open reading frame 11	9.70
60	446896	T15767	Hs.22452	Homo sapiens mRNA for KIAA1737 protein,	9.70
	421470	R27496	Hs.1378	annexin A3	9.64
	406554				9.60
	401424				9.58
	407902	AL117474	Hs.41181	Homo sapiens mRNA; cDNA DKFZp727C191 (fr	9.56
65	423545	AP000692	Hs.129781	chromosome 21 open reading frame 5	9.54
	439024	R96696	Hs.35598	ESTs	9.51
	431548	AI834273	Hs.9711	novel protein	9.48
	409282	AK000631	Hs.52256	hypothetical protein FLJ20624	9.45
	446271	D82484	Hs.100469	ESTs	9.42
	448692	AW013907	Hs.224276	methylcrotonoyl-Coenzyme A carboxylase 2	9.26

	414140	AA281279	Hs.23317	hypothetical protein FLJ14681	9.24
	435980	AF274571	Hs.129142	deoxyribonuclease II beta	9.24
	421246	AW582962	Hs.300961	CGI-47 protein	9.20
	427304	AA761526	Hs.163853	ESTs	9.16
5	442914	AW188551	Hs.99519	hypothetical protein FLJ14007	9.16
	413627	BE182082	Hs.246973	ESTs	9.14
	439699	AF086534	Hs.187561	ESTs, Moderately similar to ALU1_HUMAN A	9.10
	437718	AI927288	Hs.196779	ESTs	9.07
	439820	AL360204	Hs.283853	Homo sapiens mRNA full length insert cDN	9.06
10	447342	AI199268	Hs.19322	Homo sapiens, Similar to RIKEN cDNA 2010	9.05
	446223	BE300091	Hs.118699	hypothetical protein FLJ12969	9.04
	410001	AB041036	Hs.57771	kalikrein 11	9.03
	424012	AW368377	Hs.137569	tumor protein 63 kDa with strong homolog	9.03
	441791	AW372449	Hs.175982	hypothetical protein FLJ21159	9.02
15	448206	BE622585	Hs.3731	ESTs, Moderately similar to I38022 hypot	9.02
	414269	AA298489		olfactory receptor, family 51, subfamily	8.99
	442081	AA401863	Hs.22380	ESTs	8.98
	420092	AA814043	Hs.88045	ESTs	8.85
	411630	U42349	Hs.71119	Putative prostate cancer tumor suppresso	8.80
20	421863	AI952677	Hs.108972	Homo sapiens mRNA; cDNA DKFZp434P228 (fr	8.80
	454141	AW138413	Hs.182356	ATP-binding cassette, sub-family C (CFTR	8.80
	418278	AI088489	Hs.83937	hypothetical protein	8.78
	426330	L22524	Hs.22558	matrix metalloproteinase 7 (matrilysin,	8.76
	432415	T16971	Hs.289014	ESTs, Weakly similar to A43832 mucin 2 p	8.75
25	424906	AI566086	Hs.153716	Homo sapiens mRNA for Hmcb33 protein, 3'	8.74
	415245	N59650	Hs.27252	ESTs	8.72
	442409	BE208843	Hs.129544	hypothetical protein MGC15438	8.70
	404571				8.66
	418033	W68180	Hs.259855	elongation factor-2 kinase	8.64
30	456497	AW967956	Hs.123648	ESTs, Weakly similar to AF108460 1 ubinu	8.56
	405876				8.54
	448807	AI571940	Hs.7549	ESTs	8.52
	445372	N36417	Hs.144928	ESTs	8.48
	425171	AW732240	Hs.300615	ESTs	8.44
35	418968	X04430	Hs.93913	interleukin 6 (interferon, beta 2)	8.36
	407385	AA610150	Hs.272072	ESTs, Weakly similar to I38022 hypotheti	8.31
	433172	AB037841	Hs.102652	hypothetical protein ASH1	8.30
	422631	BE218919	Hs.118793	hypothetical protein FLJ10688	8.27
	412719	AW016610	Hs.129911	ESTs	8.24
40	418849	AW474547	Hs.53565	Homo sapiens PIG-M mRNA for mannosyltran	8.22
	444922	AI821750	Hs.144871	Homo sapiens cDNA FLJ13752 fis, clone PL	8.22
	427674	NM_003528	Hs.2178	H2B histone family, member Q	8.20
	432101	AI918950	Hs.11092	EphA3	8.17
	418288	H51299		gb:yp07c06.s1 Soares breast 3NbHBst Homo	8.15
45	404915				8.08
	440106	AA864968	Hs.127699	KIAA1603 protein	8.07
	442861	AA243837	Hs.57787	ESTs	8.06
	452259	AA317439	Hs.28707	signal sequence receptor, gamma (translo	8.06
	443250	AI041530	Hs.132107	ESTs	8.06
50	437267	AW511443	Hs.258110	ESTs	8.04
	452891	N75582	Hs.212875	ESTs, Weakly similar to DYH9_HUMAN CILI	8.02
	422219	AW978073		regulator of mitotic spindle assembly 1	8.00
	453049	BE537217	Hs.30343	ESTs	8.00
55	439731	AI953135	Hs.45140	hypothetical protein FLJ14084	7.98
	408554	AA836381	Hs.7323	nuclear receptor co-repressor/HDAC3 comp	7.94
	421154	AA284333	Hs.287631	Homo sapiens cDNA FLJ14269 fis, clone PL	7.94
	430107	AA465283	Hs.105069	ESTs	7.94
	433404	T32982	Hs.102720	ESTs	7.93
60	450813	AI739625	Hs.203376	ESTs	7.90
	416239	AL038450	Hs.48948	ESTs	7.85
	448212	AI475858		gb:tc87d07.x1 NCL CGAP CLL1 Homo sapiens	7.82
	449532	W74653	Hs.271593	ESTs, Moderately similar to A47582 B-cel	7.82
	413930	N86153	Hs.75618	RAB11A, member RAS oncogene family	7.80
	458191	AI420611	Hs.127832	ESTs	7.80
65	444858	AI199738	Hs.208275	ESTs, Weakly similar to ALUA_HUMAN IIII	7.78
	457498	AI732230	Hs.191737	ESTs	7.78
	407235	D20569	Hs.169407	SAC2 (suppressor of actin mutations 2, y	7.76
	433759	AA680003	Hs.109363	Homo sapiens cDNA: FLJ23603 fis, clone L	7.74
	433805	AA706910	Hs.112742	ESTs	7.74



	426485	NM_006207	Hs.170040	platelet-derived growth factor receptor-	7.72
	446028	R44714	Hs.106795	Homo sapiens cDNA FLJ13136 fis, clone NT	7.72
	418555	AA17215	Hs.87159	hypothetical protein FLJ12577	7.70
	447489	AW262580	Hs.147674	protocadherin beta 16	7.70
5	419839	U24577	Hs.93304	phospholipase A2, group VII (platelet-ac	7.68
	416857	AA188775	Hs.292453	ESTs	7.68
	413801	M62246	Hs.35406	ESTs, Highly similar to unnamed protein	7.68
	425480	AB023198	Hs.158135	KIAA0981 protein	7.66
	420120	AL049610	Hs.95243	transcription elongation factor A (SII)-	7.64
10	424099	AF071202	Hs.139336	ATP-binding cassette, sub-family C (CFTR	7.64
	446307	T50083	Hs.9094	ESTs	7.63
	429220	AW207206	Hs.136319	ESTs	7.59
	420345	AW285230	Hs.25231	ESTs	7.54
	429208	AA447990	Hs.190478	ESTs	7.54
15	447247	AW369351	Hs.287955	Homo sapiens cDNA FLJ13090 fis, clone NT	7.53
	440995	T57773	Hs.10263	ESTs	7.53
	448706	AW291095	Hs.21814	interleukin 20 receptor, alpha	7.52
	410227	AB008284	Hs.61152	exostoses (multiple)-like 2	7.49
	431616	AA508552	Hs.195839	ESTs, Weakly similar to I38022 hypotheri	7.46
20	434217	AW014795	Hs.23349	ESTs	7.44
	431467	N71831	Hs.256398	Homo sapiens mRNA; cDNA DKFZp434E0528 (f	7.42
	448519	AW175665	Hs.244334	Homo sapiens protein mRNA, complete cds	7.42
	446791	AI632278	Hs.34981	ESTs	7.40
	419743	AW408762	Hs.127478	Homo sapiens clone 24416 mRNA sequence	7.39
25	445855	BE247129	Hs.145569	ESTs	7.36
	425211	M18667	Hs.1867	progastricin (pepsinogen C)	7.35
	419131	AA406293	Hs.301622	ESTs	7.34
	400294	N95796	Hs.179809	Homo sapiens protein mRNA, complete cds	7.33
	441736	AW292779	Hs.169799	ESTs	7.28
30	427701	AA411101	Hs.221750	nuclear autoantigenic sperm protein (his	7.24
	457733	AW974812	Hs.291971	ESTs	7.24
	418432	M14156	Hs.85112	insulin-like growth factor 1 (somatomedi	7.22
	441201	AW118822	Hs.128757	ESTs	7.21
	419953	BE267154	Hs.125752	ESTs	7.20
35	419991	AJ000098	Hs.94210	eyes absent (Drosophila) homolog 1	7.20
	425018	BE245277	Hs.154196	E4F transcription factor 1	7.20
	424560	AA158727	Hs.150555	protein predicted by clone 23733	7.18
	435380	AA679001	Hs.192221	ESTs	7.14
	420658	AW965215	Hs.130707	ESTs	7.12
40	408291	AB023191	Hs.44131	KIAA0974 protein	7.10
	409110	AA191493	Hs.48778	riban protein	7.10
	414485	W27026	Hs.182625	VAMP (vesicle-associated membrane protei	7.10
	430039	BE253012	Hs.153400	ESTs, Weakly similar to ALU1_HUMAN ALU S	7.10
	450832	AW970602	Hs.105421	ESTs	7.10
45	417153	X57010	Hs.81343	collagen, type II, alpha 1 (primary oste	7.08
	412446	AI768015	Hs.92127	ESTs	7.07
	412853	Z45794	Hs.238809	ESTs	7.06
	418051	AW192535	Hs.19479	ESTs	7.06
	421566	NM_000399	Hs.1395	early growth response 2 (Krox-20 (Drosop	7.04
50	446999	AA151520	Hs.279525	hypothetical protein MGC4485	7.04
	440529	AW207640	Hs.16478	Homo sapiens cDNA: FLJ21718 fis, clone C	7.04
	441111	AI806887	Hs.126594	ESTs	7.01
	451027	AW519204	Hs.40808	ESTs	7.00
	408432	AW195262		gbxn67b05.x1 NCL CGAP_CML1 Homo sapiens	7.00
55	432223	AA333283	Hs.285336	Homo sapiens, clone IMAGE:3460280, mRNA	7.00
	444805	AB007899	Hs.12017	homolog of yeast ubiquitin-protein ligas	6.99
	414212	AA136569	Hs.295940	KIAA0187 gene product	6.98
	431725	X65724	Hs.2839	Norrie disease (pseudoglioma)	6.98
	449685	AW286669	Hs.66095	ESTs	6.97
60	447313	U92981	Hs.18081	Homo sapiens clone DT1P186 mRNA, CAG rep	6.96
	424590	AW966399	Hs.46821	hypothetical protein FLJ20086	6.94
	449655	AI021987	Hs.59970	ESTs	6.92
	419563	AA528235	Hs.193162	Homo sapiens cDNA FLJ11983 fis, clone HE	6.90
	434163	AW974720	Hs.25206	group XII secreted phospholipase A2	6.89
65	415809	Z32789	Hs.46601	ESTs	6.86
	425782	U66468	Hs.159525	cell growth regulatory with EF-hand doma	6.85
	417958	AA767382	Hs.193417	ESTs	6.84
	427408	AA583206	Hs.2156	RAR-related orphan receptor A	6.79
	445873	AA250970	Hs.251946	poly(A)-binding protein, cytoplasmic 1-I	6.74

	410718	AI920783	Hs.191435	ESTs	6.74
	432363	AA534489		gb:mf76g11.s1 NCL_CGAP_Co3 Homo sapiens	6.74
	436521	AW203986	Hs.213003	ESTs	6.73
5	436804	AA625279	Hs.26892	uncharacterized bone marrow protein BM04	6.73
	419083	AI479560	Hs.98613	Homo sapiens cDNA FLJ12292 fis, clone MA	6.72
	418245	AA088767	Hs.83883	transmembrane, prostate androgen induced	6.70
	420714	BE172704	Hs.222746	KIAA1610 protein	6.70
	412707	AW206373	Hs.16443	Homo sapiens cDNA: FLJ21721 fis, clone C	6.67
	421896	N62293	Hs.45107	ESTs	6.66
10	411078	AI222020	Hs.182364	CocoaCrisp	6.66
	452465	AA610211	Hs.34244	ESTs	6.66
	422763	AA033699	Hs.83938	ESTs, Moderately similar to MAS2_HUMAN M	6.66
	444618	AV653785	Hs.300171	ELL-RELATED RNA POLYMERASE II, ELONGATIO	6.64
	450164	AI239923	Hs.30098	ESTs	6.63
15	431060	AF039307	Hs.249171	homeo box A11	6.62
	408031	AA081395	Hs.42179	Homo sapiens cDNA FLJ10366 fis, clone NT	6.62
	420285	AA258124	Hs.293878	ESTs, Moderately similar to ZN91_HUMAN Z	6.62
	444670	H58373	Hs.37494	hypothetical protein MGC5370	6.62
	444489	AI151010	Hs.157774	ESTs	6.60
20	445685	AW779829	Hs.263436	gb:hm88a05.x1 NCL_CGAP_Kid11 Homo sapien	6.60
	435677	AA694142	Hs.293726	ESTs, Weakly similar to TSGA RAT TESTIS	6.59
	452221	C21322	Hs.11577	hypothetical protein FLJ22242	6.59
	431510	AA580082	Hs.112284	ESTs	6.56
	415874	AF091622	Hs.78893	KIAA0244 protein	6.54
25	418405	AI868262	Hs.11898	ESTs, Highly similar to KIAA1370 protein	6.54
	452768	AW069459	Hs.61539	ESTs	6.54
	401451				6.52
	416289	W26333		ESTs	6.52
	431778	AL080276	Hs.268562	regulator of G-protein signalling 17	6.51
30	409089	NM_014781	Hs.50421	KIAA0203 gene product	6.50
	442833	AA328153	Hs.88201	ESTs, Weakly similar to A Chain A, Cryst	6.50
	431992	NM_002742	Hs.2891	protein kinase C, mu	6.49
	418833	AW974899	Hs.292776	ESTs	6.48
	429163	AA884766		gb:am20a10.s1 Soares_NFL_T_GBC_S1 Homo s	6.46
35	430403	AF039390	Hs.241382	tumor necrosis factor (ligand) superfamily	6.46
	443058	AW451642	Hs.16732	ESTs	6.46
	418584	AA631143	Hs.179809	Homo sapiens protein mRNA, complete cds	6.44
	432674	AA641092	Hs.257339	ESTs, Weakly similar to K38022 hypotheti	6.44
	423600	AI633559	Hs.29076	ESTs	6.44
40	404253				6.42
	433610	AA806822	Hs.112547	ESTs	6.42
	421552	AF026692	Hs.105700	secreted frizzled-related protein 4	6.41
	407118	AA156790	Hs.262036	ESTs, Weakly similar to Z223_HUMAN ZINC	6.40
	408608	N79738	Hs.138102	KIAA0853 protein	6.40
45	421452	AI925946	Hs.104530	fetal hypothetical protein	6.40
	433285	AW975944	Hs.237396	ESTs	6.40
	434926	BE543269	Hs.50252	mitochondrial ribosomal protein L32	6.40
	446189	H85224	Hs.214013	ESTs	6.40
	416806	NM_000288	Hs.78993	peroxisomal biogenesis factor 7	6.38
50	416467	H57585	Hs.37467	ESTs	6.36
	453403	BE466639	Hs.61779	Homo sapiens cDNA FLJ13591 fis, clone PL	6.34
	429769	NM_004917	Hs.218366	kallikrein 4 (protease, enamel matrix, p	6.34
	423642	AW452650	Hs.157148	hypothetical protein MGC13204	6.32
	425843	BE313280	Hs.159627	death associated protein 3	6.32
55	439221	AA737106	Hs.32250	ESTs, Moderately similar to I78885 serin	6.32
	428194	AA765603	Hs.180877	H3 histone, family 3B (H3.3B)	6.30
	431858	X63629	Hs.2877	cadherin 3, type 1, P-cadherin (placenta	6.30
	439366	AF100143	Hs.6540	fibroblast growth factor 13	6.30
	452789	AW081626	Hs.242561	ESTs	6.30
60	416836	D54745	Hs.80247	cholecystokinin	6.30
	436962	AW377314	Hs.5364	DKFZP564I052 protein	6.29
	433383	AF034837	Hs.192731	double-stranded RNA specific adenosine d	6.29
	418636	AW749855		gb:QV4-BT0534-281299-053-c05 BT0534 Homo	6.26
	450728	AW162923	Hs.25363	presenilin 2 (Alzheimer disease 4)	6.25
65	440293	AI004193	Hs.22123	ESTs	6.24
	453745	AA952989	Hs.63908	hypothetical protein MGC14728	6.24
	426595	AW971980	Hs.62402	p21/Cdc42/Rac1-activated kinase 1 (yeast	6.24
	444412	AI147652	Hs.216381	Homo sapiens clone HH409 unknown mRNA	6.24
	413384	NM_000401	Hs.75334	exostoses (multiple) 2	6.22

	426320	W47595	Hs.169300	transforming growth factor, beta 2	6.22
	423349	AF010258	Hs.127428	homeo box A9	6.20
	429165	AW008886	Hs.118258	prostate cancer associated protein 1	6.18
5	424800	AL035588	Hs.153203	MyoD family inhibitor	6.18
	409564	AA045857	Hs.54943	fracture callus 1 (rat) homolog	6.16
	438796	W67821	Hs.108590	genethonin 1	6.16
	425451	AF242769	Hs.157461	mesenchymal stem cell protein DSC54	6.14
	451683	AI872360	Hs.208293	ESTs	6.14
	413623	AA825721	Hs.246973	ESTs	6.12
10	452232	AW020603	Hs.271698	radial spoke protein 3	6.12
	453390	AA862496	Hs.28482	ESTs	6.12
	435542	AA687376	Hs.289533	ESTs	6.12
	420424	AB033036	Hs.97594	KIAA1210 protein	6.11
	407103	AA424881	Hs.258301	hypothetical protein MGC13170	6.10
15	409734	BE161684	Hs.58155	hypothetical protein	6.10
	432686	BE223007	Hs.152460	Homo sapiens cDNA FLJ12909 fis, clone NT	6.10
	438361	AA805666	Hs.146217	Homo sapiens cDNA: FLJ23077 fis, clone L	6.10
	411479	AW848047		gbdL3-CT0214-291299-052-A12 CT0214 Homo	6.10
	438848	W28948	Hs.10762	ESTs	6.08
20	452728	AF188527	Hs.61661	ESTs, Weakly similar to AF174605 1 F-box	6.08
	445895	D29954	Hs.13421	KIAA0056 protein	6.08
	440774	AI420811	Hs.127832	ESTs	6.07
	422583	AA410506	Hs.118578	KIAA0874 protein	6.06
	427500	AW970017	Hs.283948	ESTs, Weakly similar to S65657 alpha-1C-	6.04
25	443646	AI085198	Hs.288699	ESTs	6.04
	410566	AA373210	Hs.43047	Homo sapiens cDNA FLJ13585 fis, clone PL	6.02
	417845	AL117461	Hs.82719	Homo sapiens mRNA: cDNA DKFZp586F1822 (f	6.02
	430273	AI311127	Hs.125522	ESTs	6.02
	434792	AA649253	Hs.132458	ESTs	6.01
30	442490	AW965078	Hs.30212	thyroid receptor interacting protein 15	6.01
	420026	AI831190	Hs.166676	ESTs	6.00
	437782	AK370876	Hs.123163	exportin 1 (CRM1, yeast, homolog)	6.00
	447359	NM_012093	Hs.18268	adenylate kinase 5	6.00
	447713	AI420733	Hs.207083	ESTs	6.00
35	451073	AI758905	Hs.206063	ESTs	6.00
	451640	AA185601	Hs.26771	Human DNA sequence from clone 747H23 on	6.00
	410889	X91662	Hs.66744	twist (Drosophila) homolog (acrocephalos	5.97
	441222	AI277237	Hs.44208	hypothetical protein FLJ23153	5.96
	447732	AI758398	Hs.161318	ESTs	5.96
40	437756	AA767537	Hs.197096	ESTs	5.95
	408829	NM_006042	Hs.48384	heparan sulfate (glucosamine) 3-O-sulfot	5.94
	453911	AW503857	Hs.4007	Sarcolemmal-associated protein	5.94
	414085	AA114016	Hs.75746	aldehyde dehydrogenase 1 family, member	5.93
45	408875	NM_015434	Hs.48604	DKFZP434B168 protein	5.92
	439451	AF086270	Hs.278554	heterochromatin-like protein 1	5.92
	423853	AB011537	Hs.133466	slit (Drosophila) homolog 1	5.91
	453060	AW294092	Hs.21594	hypothetical protein MGC15754	5.91
	420407	AA814732	Hs.145010	lipopolysaccharide-specific response 5-ii	5.91
	450480	X82125	Hs.25040	zinc finger protein 239	5.90
50	408446	AW450669	Hs.45068	hypothetical protein DKFZp434I143	5.88
	421039	NM_003478	Hs.101299	cullin 5	5.88
	451684	AF216751	Hs.26813	CDA14	5.88
	436063	AK000028	Hs.250857	ribosomal protein S24	5.86
	410507	AA355288	Hs.271408	transitional epithelia response protein	5.86
55	420179	N74530	Hs.21168	ESTs	5.84
	453878	AW964440	Hs.19025	DC32	5.84
	452270	AW975014	Hs.26	ferrochelatase (protoporphyrin)	5.83
	435857	AA954229	Hs.114052	ESTs	5.82
	417683	AW566008	Hs.239154	ankyrin repeat, family A (RFXANK-like),	5.82
60	432005	AA524190	Hs.120777	ESTs, Weakly similar to ELL2_HUMAN RNA P	5.81
	406815	AA833930	Hs.288036	tRNA isopentanylpyrophosphate transferas	5.80
	437980	R50393	Hs.278436	KIAA1474 protein	5.80
	425856	AA364908	Hs.98927	hypothetical protein FLJ13993	5.79
	400301	X03635	Hs.1657	estrogen receptor 1	5.78
65	446261	AA313893	Hs.13399	hypothetical protein FLJ12615 similar to	5.78
	410141	R07775	Hs.287657	Homo sapiens cDNA: FLJ21291 fis, clone C	5.77
	427258	AA400091	Hs.39421	ESTs	5.76
	419108	AA389724	Hs.191264	ESTs, Weakly similar to ALU7_HUMAN ALU S	5.76
	442029	AW956698	Hs.14456	neural precursor cell expressed, develop	5.76

	407783	AW996872	Hs.172028	a disintegrin and metalloproteinase doma	5.75
	434408	AI031771	Hs.132586	ESTs	5.74
	415077	L41607	Hs.934	glucosaminyl (N-acetyl) transferase 2, I	5.74
5	432435	BE218886	Hs.282070	ESTs	5.74
	433313	W20128	Hs.296039	ESTs	5.73
	431740	N75450	Hs.183412	ESTs, Moderately similar to AF116721 67	5.73
	412991	AW949013		gb:QV4-FT0005-110500-201-e12 FT0005 Homo	5.72
	418852	BE537037	Hs.273294	hypothetical protein FLJ20069	5.72
10	418882	NM_004996	Hs.89433	ATP-binding cassette, sub-family C (CFTR	5.72
	446867	AB007891	Hs.16349	KIAA0431 protein	5.72
	437866	AA156781	Hs.83992	metallothionein 1E (functional)	5.72
	410232	AW372451	Hs.61184	CGI-79 protein	5.70
	414452	AA454038	Hs.28032	ESTs	5.70
15	422762	AL031320	Hs.118976	Human DNA sequence from clone RP1-20N2 o	5.70
	428730	AA625947	Hs.25750	ESTs	5.70
	431571	AW500486	Hs.180610	splicing factor proline/glutamine rich (	5.70
	433393	AF038564	Hs.98074	itchy (mouse homolog) E3 ubiquitin prote	5.70
	450616	AL133067	Hs.25214	hypothetical protein	5.70
20	443774	AL117428	Hs.9740	DKFZP434A236 protein	5.69
	448100	AW967109	Hs.13804	hypothetical protein dJ462023.2	5.69
	419168	AI336132	Hs.33718	Homo sapiens cDNA FLJ12841 fis, clone NT	5.68
	416653	AA768553	Hs.77496	metallothionein 1E (functional)	5.67
	452679	Z42387	Hs.4299	transmembrane, prostate androgen induced	5.68
25	450244	AA007534	Hs.125062	ESTs	5.66
	408621	AI970672	Hs.46638	chromosome 11 open reading frame 8	5.65
	450325	AI935962	Hs.26289	ESTs	5.65
	439671	AW162840	Hs.6641	kinesin family member 5C	5.64
	452387	AI680772	Hs.4316	trinucleotide repeat containing 12	5.64
30	413992	W26276	Hs.136075	RNA, U2 small nuclear	5.63
	444151	AW972917	Hs.128749	alpha-methylacyl-CoA racemase	5.63
	417791	AW965339	Hs.111471	ESTs	5.62
	410196	AI936442	Hs.59838	hypothetical protein FLJ10808	5.60
	415123	D60925		ESTs	5.60
35	429170	NM_001394	Hs.2359	dual specificity phosphatase 4	5.60
	434415	BE177494		gb:RC6-HT0596-270300-011-C05 HT0596 Homo	5.60
	440738	AI004650	Hs.225674	WD repeat domain 9	5.60
	443830	AI142095	Hs.143273	ESTs	5.60
	449603	AI655662	Hs.197698	ESTs	5.60
40	414342	AA742181	Hs.75912	KIAA0257 protein	5.59
	422634	NM_016010	Hs.118821	CGI-62 protein	5.58
	435047	AA454985	Hs.54973	cadherin-like protein VR20	5.55
	400268				5.55
	452055	AI377431	Hs.293772	hypothetical protein MGC10858	5.54
45	437073	AI885608	Hs.94122	ESTs	5.54
	434072	H70854	Hs.283059	Homo sapiens PRO1082 mRNA, complete cds	5.53
	418339	AA639902	Hs.104215	ESTs, Moderately similar to SPCN_HUMAN S	5.52
	434551	BE387162	Hs.280858	ESTs, Highly similar to A35661 DNA excis	5.52
	439569	AW602166	Hs.222399	CEGP1 protein	5.51
50	441102	AA973905	Hs.16003	intermediate filament protein syncollin	5.50
	448310	AI480316		gb:trn26h09.x1 Soares_NFL_T_GBC_S1 Homo s	5.50
	413173	BE076928	Hs.70980	ESTs	5.48
	436246	AW450983	Hs.119991	ESTs	5.48
	449300	AI656959	Hs.222165	ESTs	5.48
55	452823	AB012124	Hs.30696	transcription factor-like 5 (basic helix	5.48
	451403	AA885569	Hs.15727	Homo sapiens cDNA FLJ14511 fis, clone NT	5.46
	417061	AI675944	Hs.188691	Homo sapiens cDNA FLJ12033 fis, clone HE	5.44
	429126	AW172356	Hs.99083	ESTs	5.44
	431316	AA502663	Hs.145037	ESTs	5.44
60	439192	AW970536	Hs.105413	ESTs	5.44
	431938	AA938471	Hs.115242	specific granule protein (28 kDa); cyste	5.44
	451552	AA047233	Hs.33810	ESTs	5.43
	416991	N36389	Hs.295091	KIAA0228 gene product	5.42
	427638	AA406411	Hs.208341	ESTs, Weakly similar to KIAA0989 protein	5.42
	427718	AI798680	Hs.25933	ESTs	5.42
65	438710	AA833907	Hs.178724	ESTs, Weakly similar to ALU1_HUMAN ALU S	5.42
	406076	AL390179	Hs.137011	Homo sapiens mRNA; cDNA DKFZp547P134 (fr	5.40
	431263	AW129203	Hs.13743	ESTs	5.40
	421264	AL039123	Hs.103042	microtubule-associated protein 1B	5.38
	421685	AF189723	Hs.106778	ATPase, Ca++ transporting, type 2C, memb	5.37

	408460	AA054726	Hs.285574	ESTs	5.36
	409091	AW970386	Hs.269423	ESTs	5.36
	421987	AI133161	Hs.286131	CGI-101 protein	5.36
5	426002	AA418703		gb:zv98c03.s1 Soares_NhHMPu_S1 Homo sapi	5.36
	441217	AJ22183	Hs.213246	ESTs	5.36
	426006	R49031	Hs.22627	ESTs	5.35
	422806	BE314767	Hs.1581	glutathione S-transferase theta 2	5.34
	432281	AK001239	Hs.274263	hypothetical protein FLJ10377	5.32
	451982	F13036	Hs.27373	Homo sapiens mRNA; cDNA DKFZp56401763 (f	5.32
10	421129	BE439899	Hs.89271	ESTs	5.31
	444042	NM_004915	Hs.10237	ATP-binding cassette, sub-family G (WHIT	5.31
	410150	AW382942	Hs.6774	ESTs	5.30
	423952	AW877787	Hs.136102	KIAA0853 protein	5.30
15	452822	X85689	Hs.288617	hypothetical protein FLJ22621	5.30
	447752	M73700	Hs.347	lactotransferrin	5.29
	441766	R53790	Hs.23294	hypothetical protein FLJ14393	5.29
	431359	AW993522	Hs.292934	ESTs	5.27
	427212	AW293849	Hs.58279	ESTs, Weakly similar to ALU7_HUMAN ALU S	5.27
	449918	T60525	Hs.299221	pyruvate dehydrogenase kinase, isoenzyme	5.27
20	454014	AW016670	Hs.233275	ESTs	5.27
	419714	AA758751	Hs.98216	ESTs	5.26
	428845	AL157579	Hs.153610	KIAA0751 gene product	5.26
	417333	AL157545	Hs.42179	bromodomain and PHD finger containing, 3	5.24
	419886	AJ345455	Hs.78915	GA-binding protein transcription factor,	5.24
25	407182	AA312551	Hs.230157	ESTs	5.22
	420111	AA255652		gb:zs21h11.1 NCL_CGAP_GCB1 Homo sapiens	5.22
	428058	AI821625	Hs.191602	ESTs	5.22
	459551	AI472808		gb:ij70e07.x1 Soares_NSF_F8_9W_OT_PA_P_S	5.22
30	432524	AA458020	Hs.293287	ESTs	5.22
	436207	AA334774	Hs.12845	hypothetical protein MGC13159	5.22
	410870	U81599	Hs.66731	homeo box B13	5.22
	451418	BE387790	Hs.26369	hypothetical protein FLJ20287	5.22
	408757	NM_001898	Hs.123114	cystatin SN	5.21
35	441124	T97717	Hs.119563	ESTs	5.21
	428593	AW207440	Hs.185973	degenerative spermatocyte (homolog Dros	5.21
	436401	AI087958	Hs.29088	ESTs	5.20
	437113	AA744693		gb:my26c10.s1 NCL_CGAP_GCB1 Homo sapiens	5.20
	450947	AI745400	Hs.204662	ESTs	5.20
40	453279	AW893940	Hs.59698	ESTs	5.20
	445467	AJ239832	Hs.15517	ESTs, Weakly similar to ALU4_HUMAN ALU S	5.19
	448944	AB014605	Hs.22599	atrophin-1 interacting protein 1; activi	5.19
	412198	AA937111	Hs.69165	ESTs	5.18
	422646	H87883	Hs.151380	ESTs, Weakly similar to T16584 hypotheti	5.18
45	438986	AF085888	Hs.269307	ESTs	5.18
	453954	AW118338	Hs.75251	DEAD/H (Asp-Glu-Ala-Asp/His) box binding	5.18
	447541	AK000288	Hs.18800	hypothetical protein FLJ20281	5.18
	434029	AA621763	Hs.170434	Homo sapiens cDNA FLJ14242 fis, clone OV	5.16
	459294	AW977286	Hs.169531	RBP1-like protein	5.16
50	429441	AJ224172	Hs.204096	lipophilin B (uteroglobin family member)	5.16
	424692	AA428834	Hs.151791	KIAA0092 gene product	5.15
	427359	AW020782	Hs.79981	Homo sapiens cDNA: FLJ23006 fis, clone L	5.15
	419872	AJ422951	Hs.146162	ESTs	5.15
	428422	AK001494	Hs.202598	Homo sapiens cDNA FLJ10632 fis, clone NT	5.14
55	448902	Z45998	Hs.22543	Homo sapiens mRNA; cDNA DKFZp76111912 (f	5.14
	459055	N23235	Hs.30567	ESTs, Weakly similar to B34087 hypotheti	5.14
	431318	AA502700	Hs.293147	ESTs, Moderately similar to A46010 X-link	5.14
	452953	AI932884	Hs.271741	ESTs, Weakly similar to A46010 X-linked	5.13
	428372	AK000684	Hs.183887	hypothetical protein FLJ22104	5.12
60	434401	AI864131	Hs.71119	Putative prostate cancer tumor suppresso	5.12
	416434	AW163045	Hs.79334	nuclear factor, interleukin 3 regulated	5.11
	410268	AA316181	Hs.61635	six transmembrane epithelial antigen of	5.10
	417517	AF001176	Hs.82238	POP4 (processing of precursor, S. cerev	5.10
	453616	NM_003462	Hs.33846	dynein, axonemal, light intermediate pol	5.10
65	427958	AA418000	Hs.98280	potassium intermediate/small conductance	5.09
	407945	X69208	Hs.606	ATPase, Cu++ transporting, alpha polypep	5.08
	425154	NM_001851	Hs.154850	collagen, type IX, alpha 1	5.08
	412863	AA121873	Hs.59757	zinc finger protein 281	5.06
	420807	AA280627	Hs.57846	ESTs	5.06
	430568	AA769221	Hs.270847	delta-tubulin	5.06

	433687	AA743991	gb:ny57g01.s1 NCL CGAP_Pr18 Homo sapiens	5.06
	438375	AW015940	ESTs	5.06
	418092	R45154	ESTs	5.06
5	418576	AW968159	Alu-binding protein with zinc finger dom	5.05
	413328	Y15723	guanylate cyclase 1, soluble, alpha 3	5.04
	414271	AK000275	protein kinase C binding protein 1	5.04
	432729	AK000292	hypothetical protein FLJ20285	5.04
	433433	AI692623	Homo sapiens clone Z3-1 placenta expres	5.04
	439662	H97552	ESTs	5.04
10	439743	AL389956	Homo sapiens mRNA full length insert cDN	5.04
	417511	AL049176	chordin-like	5.02
	437814	AI088192	ESTs, Weakly similar to DDX9_HUMAN ATP-D	5.02
	426342	AF093419	multiple PDZ domain protein	5.02
	429782	NM_005754	Ras-GTPase-activating protein SH3-domain	5.02
15	429975	AI167145	ESTs	5.02
	436209	AW850417	ESTs, Moderately similar to unnamed prot	5.02
	438571	AW020775	ESTs	5.02
	450223	AA418204	natural killer-tumor recognition sequenc	5.02
	408267	AW380525	tubulin-specific chaperone e	5.01
20	417730	Z44761	gb:HSC28F061 normalized infant brain cDN	5.00
	425465	L18964	protein kinase C, iota	5.00
	430599	NM_004855	phosphatidylinositol glycan, class B	5.00
	450961	AW978813	metallothionein 1E (functional)	5.00
	451366	AB029006	spastic paraplegia 4 (autosomal dominant	5.00
25	420380	AA640891	ESTs	4.99
	424947	R77952	ESTs, Weakly similar to alternatively sp	4.99
	442653	BE269247	gb:601185486F1 NIH_MGC_8 Homo sapiens cD	4.98
	457211	AW972565	ESTs, Weakly similar to S51797 vasodilat	4.97
	425851	NM_001490	glucosaminyl (N-acetyl) transferase 1, c	4.97
30	446279	AA490770	ESTs	4.96
	433377	AI752713	ESTs	4.96
	450218	R02018	ankylosis, progressive (mouse) homolog	4.96
	412715	NM_000947	primase, polypeptide 2A (58kD)	4.94
	448164	R61680	ESTs, Moderately similar to Z195_HUMAN Z	4.94
35	420121	AW968271	ESTs, Weakly similar to ALU1_HUMAN ALU S	4.94
	421689	N87820	KIAA1696 protein	4.93
	445808	AV655234	ESTs, Moderately similar to PC4259 ferri	4.92
	416533	BE244053	retinoblastoma-like 2 (p130)	4.92
	418049	AA211487	Homo sapiens, Similar to nuclear localiz	4.92
40	436039	AW023323	ESTs	4.92
	432653	N62096	ESTs, Weakly similar to JC7328 amino aci	4.91
	420324	AF163474	prostate androgen-regulated transcript 1	4.91
	403047			4.91
	436899	AA764852	ESTs	4.90
45	431117	AF003522	delta (Drosophila)-like 1	4.90
	427617	D42063	RAN binding protein 2	4.88
	428804	AK000713	hypothetical protein FLJ20706	4.88
	433050	AI093930	Homo sapiens cDNA: FLJ21000 fis, clone C	4.88
	418575	AA225313	ESTs, Weakly similar to TRHY_HUMAN TRICH	4.86
50	432615	AA557191	ESTs, Weakly similar to I54374 gene NF2	4.86
	412652	AI801777	ESTs	4.86
	432473	AI202703	ESTs	4.86
	449071	NM_005872	breast carcinoma amplified sequence 2	4.86
	450654	AJ245587	Kruppel-type zinc finger protein	4.85
55	418866	T65754	gb:yc11c07.s1 Stratagene lung (937210) H	4.85
	407596	R86913	gb:yc30f05.r1 Soares fetal liver spleen	4.84
	456516	BE172704	KIAA1610 protein	4.84
	426501	AW043782	ESTs	4.84
	448730	AB032983	KIAA1157 protein	4.84
60	458339	AW976853	ESTs	4.83
	422083	NM_001141	arachidonate 15-lipoxygenase, second typ	4.82
	420159	AI572490	Homo sapiens cDNA: FLJ21245 fis, clone C	4.82
	424103	NM_001918	dihydrolipoamide branched chain transacy	4.82
	445535	W15267	low density lipoprotein receptor-related	4.82
65	422048	NM_012445	spondin 2, extracellular matrix protein	4.82
	416737	AF154335	LIM domain protein	4.82
	419972	AL041465	golgin-67	4.81
	420235	AA256756	ESTs	4.81
	423412	AF109300	prostate cancer associated protein 5	4.80

	429598	AA811257	Hs.269710	ESTs	4.80
	457114	AI821625	Hs.191602	ESTs	4.80
	421828	AW891965	Hs.289109	histone deacetylase 3	4.79
5	424602	AK002055	Hs.301129	hypothetical protein FLJ11183	4.78
	428364	AA426565	Hs.160541	ESTs, Moderately similar to ALU1_HUMAN A	4.78
	452335	AW188944	Hs.61272	ESTs	4.78
	410765	AI694972	Hs.66180	nucleosome assembly protein 1-like 2	4.77
	421040	AA715026	Hs.135280	ESTs	4.76
10	421518	AI056392	Hs.208819	ESTs	4.76
	452560	BE077084		ESTs	4.76
	408752	AW963990		gb:EST376063 MAGE resequences, MAGH Homo	4.75
	439703	AF086538	Hs.196245	ESTs	4.75
	418836	AI855499	Hs.181712	ESTs	4.74
15	450642	R39773	Hs.7130	copine IV	4.74
	419879	Z17805	Hs.93564	Homer, neuronal immediate early gene, 2	4.74
	411440	AW749402		gb:QV4-BT0383-281299-061-c06 BT0383 Homo	4.74
	450649	NM_001429	Hs.297722	E1A binding protein p300	4.74
	408738	NM_014785	Hs.47313	KIAA0258 gene product	4.73
20	435020	AW505076	Hs.301855	DiGeorge syndrome critical region gene 8	4.72
	411624	BE145954		KIAA0594 protein	4.72
	439360	AA448488	Hs.55346	ribosomal protein L44	4.72
	440431	R35252	Hs.24944	ESTs, Weakly similar to 2109260A B cell	4.72
	442611	BE077155	Hs.177537	hypothetical protein DKFZp761B1514	4.72
25	443555	N71710	Hs.21398	ESTs, Moderately similar to A Chain A, H	4.72
	453800	BE300741	Hs.288416	hypothetical protein FLJ13340	4.72
	457528	AW973791	Hs.292784	ESTs	4.72
	416795	AI497778	Hs.168053	HBV pX associated protein-8	4.71
	407302	R74206	Hs.268755	ESTs, Weakly similar to I78885 serine/th	4.71
30	404721				4.70
	426261	AW242243	Hs.168670	peroxisomal farnesylated protein	4.70
	431924	AK000850	Hs.272203	Homo sapiens cDNA FLJ20843 fis, clone AD	4.70
	435256	AF193766	Hs.13672	cytokine-like protein C17	4.70
	438295	AI394151	Hs.37932	ESTs	4.70
35	442655	AW027457	Hs.30323	ESTs, Weakly similar to B34087 hypotheti	4.70
	415788	AW628686	Hs.78851	KIAA0217 protein	4.69
	442760	BE075297	Hs.10067	ESTs, Weakly similar to A43932 mucin 2 p	4.69
	432432	AA541323	Hs.115831	ESTs	4.68
	454398	AA463437	Hs.11556	Homo sapiens cDNA FLJ12566 fis, clone NT	4.68
40	452741	BE392914	Hs.30503	Homo sapiens cDNA FLJ11344 fis, clone PL	4.67
	424853	BE549737	Hs.132957	Human EST clone 122887 mariner transposo	4.67
	419706	C04649	Hs.77899	tropomyosin 1 (alpha)	4.66
	412088	AI689496	Hs.108932	ESTs	4.65
	416276	U41060	Hs.79136	LIV-1 protein, estrogen regulated	4.64
45	429281	AA830856	Hs.28808	Homo sapiens cDNA: FLJ21122 fis, clone C	4.64
	448207	AI475480	Hs.170577	ESTs	4.64
	408374	AW025430	Hs.155591	forkhead box F1	4.64
	447182	BE328091	Hs.157396	ESTs, Weakly similar to A46010 X-linked	4.64
	451900	AB023199	Hs.27207	KIAA0982 protein	4.63
50	421437	AW821252	Hs.104336	hypothetical protein	4.63
	418624	AI734080	Hs.104211	ESTs	4.63
	426172	AA371307	Hs.125056	ESTs	4.62
	439831	AW136488	Hs.25545	ESTs	4.61
	452994	AW962597	Hs.31305	KIAA1547 protein	4.61
55	457726	AI217477	Hs.194591	ESTs	4.60
	434629	AA789081	Hs.4029	glioma-amplified sequence-41	4.60
	403764				4.58
	410659	AI080175	Hs.68826	ESTs	4.58
	432383	AK000144	Hs.274449	Homo sapiens cDNA FLJ20137 fis, clone CO	4.58
60	451246	AW189232	Hs.39140	cutaneous T-cell lymphoma tumor antigen	4.58
	433234	AB040928	Hs.65366	KIAA1495 protein	4.57
	424983	AI742434	Hs.169911	ESTs	4.56
	437812	AI582291	Hs.16846	ESTs, Weakly similar to O4HUD1 debrisoqu	4.56
	438447	AI082883	Hs.167593	hypothetical protein FLJ13409; KIAA1711	4.55
65	434715	BE005346	Hs.116410	ESTs	4.55
	447673	AI823987	Hs.182285	ESTs	4.54
	408697	N50204	Hs.283709	lipopolysaccharide specific response-7 p	4.54
	436645	AW023424	Hs.156520	ESTs	4.54
	421247	BE391727	Hs.102910	general transcription factor IIH, polype	4.53
	450377	AB033091	Hs.24936	KIAA1265 protein	4.53

	433644	AW342028	Hs.256112	gb:hb75d03.x1 NCL_CGAP_U12 Homo sapiens	4.53
	408321	AW405882	Hs.44205	cortistatin	4.53
	439225	AA192669	Hs.45032	ESTs	4.52
5	440348	AW015802	Hs.47023	ESTs	4.52
	446351	AW444551	Hs.258532	x 001 protein	4.52
	451212	AW902872	Hs.287334	ESTs	4.52
	430294	AI538226	Hs.135184	guanine nucleotide binding protein 4	4.52
	435005	U80743	Hs.4316	trinucleotide repeat containing 12	4.52
	448072	AI459306	Hs.24908	ESTs	4.50
10	403721				4.50
	451018	AW965599	Hs.247324	mitochondrial ribosomal protein S14	4.50
	453070	AK001465	Hs.31575	SEC63, endoplasmic reticulum translocon	4.49
	417412	X16896	Hs.82112	interleukin 1 receptor, type I	4.48
	439735	AI635386	Hs.142846	hypothetical protein	4.48
15	435663	AI023707	Hs.134273	ESTs	4.48
	424036	AA770688	Hs.81946	H2A histone family, member L	4.48
	426386	AA748850	Hs.174877	bladder cancer overexpressed protein	4.48
	408622	AA056050	Hs.202577	Homo sapiens cDNA FLJ12166 fis, clone MA	4.47
	444269	AI590346	Hs.146220	ESTs	4.47
20	430187	AI798909	Hs.158989	ESTs	4.46
	427761	AA412205	Hs.140996	ESTs	4.46
	430261	AA305127	Hs.237225	hypothetical protein HT023	4.46
	444169	AV648170	Hs.58756	ESTs	4.44
	430598	AK001764	Hs.247112	hypothetical protein FLJ10902	4.44
25	412903	BE007967	Hs.155795	ESTs	4.44
	417048	AI088775	Hs.55498	geranylgeranyl diphosphate synthase 1	4.44
	442710	AI015631	Hs.23210	ESTs	4.44
	457413	AA743482	Hs.165337	ESTs	4.44
30	400303	AA242758	Hs.79136	LIV-1 protein, estrogen regulated	4.42
	443268	AI800271	Hs.129445	hypothetical protein FLJ12496	4.42
	438209	AL120659	Hs.6111	aryl-hydrocarbon receptor nuclear transi	4.42
	431724	AA514535	Hs.283704	ESTs	4.41
	412280	AW205116	Hs.272814	hypothetical protein DKFZp434E1723	4.40
	440801	AA906366	Hs.190535	ESTs	4.40
35	452959	AI933416	Hs.189674	ESTs	4.40
	453661	AI026838	Hs.30120	ESTs, Weakly similar to NUCL_HUMAN NUCLE	4.40
	417421	AL138201	Hs.82120	nuclear receptor subfamily 4, group A, m	4.40
	447270	AC002551	Hs.331	general transcription factor IIC, polyp	4.38
	433641	AF080229		gb:Human endogenous retrovirus K clone 1	4.38
40	447078	AW885727	Hs.301570	ESTs	4.38
	424242	AA337476		hypothetical protein MGC13102	4.37
	408170	AW204516	Hs.31835	ESTs	4.36
	448757	AI368784	Hs.48820	TATA box binding protein (TBP)-associate	4.36
45	420021	AA252848	Hs.283557	ESTs	4.36
	448694	AI659790	Hs.253302	ESTs	4.36
	453967	AI929383	Hs.108196	hypothetical protein DKFZp434N185	4.36
	458712	AI347502	Hs.173066	hypothetical protein FLJ20761	4.36
	417251	AW015242	Hs.99488	ESTs, Weakly similar to YK54_YEAST HYPOT	4.35
	434423	NM_006769	Hs.3844	LIM domain only 4	4.35
50	423427	AL137612	Hs.285848	KIAA1454 protein	4.34
	415715	F30364		ESTs	4.33
	404561				4.32
	422669	AA782536	Hs.122647	N-myristoyltransferase 2	4.32
55	423685	BE350494	Hs.49753	uveal autoantigen with coiled coil domai	4.32
	443977	AL120986	Hs.150627	ESTs, Weakly similar to I38022 hypotheti	4.32
	425071	NM_013989	Hs.154424	deiodinase, iodothyronine, type II	4.32
	431583	AL042613	Hs.262476	S-adenosylmethionine decarboxylase 1	4.31
	411379	AI816344	Hs.12554	ESTs, Weakly similar to NPL4_HUMAN NUCLE	4.30
	421476	AW953805	Hs.21887	ESTs	4.30
60	425178	H16097	Hs.161027	ESTs	4.30
	439262	AA832333	Hs.124399	ESTs	4.30
	442818	AK001741	Hs.8739	hypothetical protein FLJ10879	4.30
	421977	W94197	Hs.110165	ribosomal protein L26 homolog	4.29
	437114	AA836641	Hs.163085	ESTs	4.28
65	420185	N44348	Hs.300794	Homo sapiens cDNA FLJ11177 fis, clone PL	4.28
	418330	BE409405	Hs.94722	ESTs	4.27
	419750	AL079741	Hs.183114	Homo sapiens cDNA FLJ14236 fis, clone NT	4.26
	437065	AL036450	Hs.103238	ESTs	4.26
	455276	BE176479		gb:RC3-HT0585-160300-022-b09 HT0585 Homo	4.24



	416292	AA179233	Hs.42390	nasopharyngeal carcinoma susceptibility	4.24
	423740	Y07701	Hs.132243	aminopeptidase puromycin sensitive	4.24
	442023	AI187878	Hs.144549	ESTs	4.24
5	426764	AA732524	Hs.151464	ESTs, Weakly similar to ALUC_HUMAN IIII	4.23
	454058	AI273419	Hs.135146	hypothetical protein FLJ13984	4.23
	456511	AA282330	Hs.145668	ESTs	4.22
	448330	AL038449	Hs.207163	ESTs	4.22
	424701	NM_005923	Hs.151988	mitogen-activated protein kinase kinase	4.21
10	432621	AI298501	Hs.12807	ESTs, Weakly similar to T46428 hypothe	4.20
	445707	AI248720	Hs.114390	ESTs	4.20
	419910	AA662913	Hs.190173	ESTs, Weakly similar to A46010 X-linked	4.20
	424085	NM_002914	Hs.139226	replication factor C (activator 1) 2 (40	4.20
	440749	W22335	Hs.7392	hypothetical protein MGC3199	4.20
15	442787	W93048	Hs.227203	hypothetical protein MGC2747	4.20
	443414	R54594	Hs.25209	ESTs	4.20
	443556	AA256769	Hs.94949	methylmalonyl-CoA epimerase	4.20
	444170	AW613879	Hs.102408	ESTs	4.20
	446751	AA766998	Hs.85874	Human DNA sequence from clone RP11-16L21	4.20
20	421041	N36914	Hs.14691	ESTs, Moderately similar to I38022 hypot	4.19
	447476	BE293466	Hs.20880	ESTs, Weakly similar to I38022 hypothe	4.19
	448543	AW897741	Hs.21380	Homo sapiens mRNA; cDNA DKFZp586P1124 (f	4.18
	410294	AB014515	Hs.288891	KIAA0615 gene product	4.18
	433607	AA602004	Hs.23260	ESTs	4.18
25	435552	AI686636	Hs.193480	ESTs, Moderately similar to ALU6_HUMAN A	4.18
	447124	AW976438	Hs.17428	RBP1-like protein	4.18
	453308	AW959731	Hs.32538	ESTs	4.17
	439328	W07411	Hs.118212	ESTs, Moderately similar to ALU3_HUMAN A	4.16
	430473	AW130690	Hs.299842	ESTs	4.16
30	437257	AI283085	Hs.290931	ESTs, Weakly similar to YFJ7_YEAST HYPOT	4.16
	438018	AK001160	Hs.5999	hypothetical protein FLJ10298	4.16
	443857	AI089292	Hs.287621	hypothetical protein FLJ14069	4.15
	446711	AF169692	Hs.12450	protocadherin 9	4.15
	419103	Z40229	Hs.96423	hypothetical protein FLJ23033	4.14
35	405403				4.14
	407378	AA299264		ESTs, Moderately similar to I38022 hypot	4.14
	408986	AW298602	Hs.197687	ESTs	4.14
	418727	AA227609	Hs.94834	ESTs	4.14
	434400	AI478211	Hs.186896	Homo sapiens cDNA FLJ11417 fis, clone HE	4.14
40	438578	AA811244	Hs.164168	ESTs	4.14
	450459	AI697193	Hs.299254	Homo sapiens cDNA: FLJ23597 fis, clone L	4.14
	429887	AW366288	Hs.145696	splicing factor (CC1.3)	4.13
	448148	NM_016578	Hs.20509	HBV pX associated protein-8	4.13
	450316	W84446	Hs.17850	hypothetical protein MGC4643	4.12
45	417531	NM_003157	Hs.1087	serine/threonine kinase 2	4.12
	431592	R69016	Hs.293871	hypothetical protein MGC10895s	4.12
	432463	AA548518	Hs.186733	ESTs	4.12
	433613	AA836126	Hs.5669	ESTs	4.12
	434739	AA804487	Hs.144130	ESTs	4.12
50	438259	AW205969	Hs.131808	ESTs	4.12
	425810	AI923827	Hs.31903	ESTs	4.10
	432672	AW973775	Hs.130760	myosin phosphatase, target subunit 2	4.10
	433345	AI681545	Hs.152982	hypothetical protein FLJ13117	4.10
	432712	AB016247	Hs.288031	sterol-C5-desaturase (fungal ERG3, delta	4.09
55	453020	AL162039	Hs.31422	Homo sapiens mRNA; cDNA DKFZp434M229 (fr	4.09
	412045	AA099802	Hs.4289	transmembrane, prostate androgen induced	4.09
	435114	AA775483	Hs.288936	mitochondrial ribosomal protein L9	4.08
	443204	AW205878	Hs.29643	Homo sapiens cDNA FLJ13103 fis, clone NT	4.08
	445459	AI478629	Hs.158465	likely ortholog of mouse putative IKK re	4.08
60	438938	H46212	Hs.137221	ESTs	4.07
	454119	BE549773	Hs.40510	uncoupling protein 4	4.06
	411000	N40449	Hs.201619	ESTs, Weakly similar to S38383 SEB48 pro	4.06
	418926	AA232658	Hs.87070	UDP-glucose:glycoprotein glucosyltransfe	4.06
	424432	AB037821	Hs.146858	protocadherin 10	4.06
	449673	AA002064	Hs.18920	ESTs	4.06
65	429299	AI620463	Hs.99197	hypothetical protein MGC13102	4.06
	422174	AL049325	Hs.112493	Homo sapiens mRNA; cDNA DKFZp584D036 (fr	4.05
	455497	AA112573	Hs.285691	Homo sapiens prestatin mRNA, complete cds	4.05
	415138	C18356	Hs.78045	tissue factor pathway inhibitor 2	4.04
	402791				4.04

	426792	AL044854	Hs.172329	KIAA0576 protein	4.04
	438660	U95740	Hs.6349	Homo sapiens, clone IMAGE:3010666, mRNA,	4.04
	442768	AL048534	Hs.48458	ESTs, Weakly similar to ALU8_HUMAN ALU S	4.04
	447568	AF155655	Hs.18885	CGI-116 protein	4.04
5	428342	AI739168	Hs.131788	Homo sapiens cDNA FLJ13458 fis, clone PL	4.04
	453439	AI572438	Hs.32976	guanine nucleotide binding protein 4	4.02
	453857	AL080235	Hs.35861	DKFZP586E1621 protein	4.02
	428249	AA130814	Hs.183291	zinc finger protein 268	4.02
10	432015	AL157504	Hs.159115	Homo sapiens mRNA; cDNA DKFZp586O0724 (f	4.02
	445495	BE622641	Hs.38489	ESTs, Weakly similar to I38022 hypotheti	4.02
	451746	M86178		ESTs	4.02
	452211	AI985513	Hs.233420	ESTs	4.02
	453046	AA284040	Hs.219441	ESTs, Highly similar to CA5B_HUMAN CARBO	4.02
	456038	AA203285	Hs.294141	ESTs, Weakly similar to alternatively sp	4.02
15	452449	AW058558	Hs.20943	ESTs	4.02
	407204	RI1833	Hs.140237	ESTs, Weakly similar to ALU1_HUMAN ALU S	4.01
	428046	AW812795	Hs.155381	ESTs, Moderately similar to I38022 hypot	4.01
	438520	AA706319	Hs.98416	ESTs	4.01
	443292	AK000213	Hs.9196	hypothetical protein	4.01
20	432715	AA247152	Hs.200483	ESTs, Weakly similar to KIAA1074 protein	4.00
	403797				4.00
	418347	AA216419	Hs.269295	gb:nc16e03.s1 NCL CGAP_Pr1 Homo sapiens	4.00
	419459	AW291128	Hs.278422	DKFZP586G1122 protein	4.00
	420911	U77413	Hs.100293	O-linked N-acetylglucosamine (GlcNAc) tr	4.00
25	425176	AW015644	Hs.301430	TEA domain family member 1 (SV40 transcr	4.00
	447505	AL049266	Hs.18724	Homo sapiens mRNA; cDNA DKFZp584F093 (fr	4.00
	453773	AL133761		gb:DKFZp761C1413_r1 761 (synonym: hamy2)	4.00
	434384	AA631910	Hs.162849	ESTs	3.99
	422471	AA311027	Hs.271894	ESTs, Weakly similar to I38022 hypotheti	3.99
30	427386	AW836261	Hs.177486	ESTs	3.98
	433394	AI907753	Hs.93810	cerebral cavernous malformations 1	3.98
	441269	AW015206	Hs.178784	ESTs	3.97
	419629	AB020695	Hs.91662	KIAA0888 protein	3.96
	435008	AF150262	Hs.162898	ESTs	3.96
35	456649	R74441	Hs.117176	poly(A)-binding protein, nuclear 1	3.96
	418723	AA504428	Hs.10487	Homo sapiens, clone IMAGE:3954132, mRNA,	3.96
	428738	NM_000380	Hs.192803	xeroderma pigmentosum, complementation g	3.95
	430456	AA314998	Hs.241503	hypothetical protein	3.95
	422017	NM_003877	Hs.110776	STAT induced STAT inhibitor-2	3.95
40	409960	BE261944	Hs.153028	hexokinase 1	3.95
	455309	AW894017		gb:RC4-NN0027-150400-012-g04 NN0027 Homo	3.95
	450295	AI766732	Hs.201194	ESTs	3.94
	456660	AA909249	Hs.112282	solute carrier family 30 (zinc transport	3.94
	410908	AA121686	Hs.10592	ESTs	3.94
45	447145	AA761073	Hs.192843	TRAF family member-associated NFKB activ	3.94
	449318	AW236021	Hs.108788	Homo sapiens, Similar to RIKEN cDNA 5730	3.94
	449869	W57990	Hs.60059	Homo sapiens cDNA FLJ11478 fis, clone HE	3.94
	411887	AW182924	Hs.128790	ESTs	3.93
	437531	AK00752	Hs.112259	T cell receptor gamma locus	3.93
50	452238	F01811	Hs.187931	ESTs	3.93
	410486	AW235094	Hs.193424	zinc finger protein	3.92
	424882	AI379481	Hs.153636	far upstream element (FUSE) binding prot	3.92
	426269	H15302	Hs.168950	Homo sapiens mRNA; cDNA DKFZp566A1046 (f	3.92
	427043	AA397679	Hs.298460	ESTs	3.92
55	440404	AI015881	Hs.125616	mitochondrial ribosomal protein S5	3.92
	452762	AW501435	Hs.171409	v-akt murine thymoma viral oncogene homo	3.92
	453058	AW612293	Hs.288684	Homo sapiens cDNA FLJ11750 fis, clone HE	3.92
	423583	AL122055	Hs.129836	KIAA1028 protein	3.92
	408001	AA046458	Hs.95296	ESTs	3.92
60	419197	N48921	Hs.27441	KIAA1615 protein	3.91
	428695	AI355647	Hs.189999	purinergic receptor (family A group 5)	3.91
	401747				3.91
	410011	AB020641	Hs.57856	PFTAIR protein kinase 1	3.91
	432205	AI806583	Hs.125291	ESTs	3.91
65	447857	AA081218	Hs.58608	Homo sapiens cDNA FLJ14206 fis, clone NT	3.91
	446494	AA463276	Hs.288906	WW Domain-Containing Gene	3.91
	408928	AL137163	Hs.57549	hypothetical protein dJ473B4	3.90
	411598	BE336654	Hs.70937	H3 histone family, member A	3.90
	424790	AL119344	Hs.13326	ESTs, Weakly similar to 2004399A chromos	3.90

	425707	AF115402	Hs.11713	E74-like factor 5 (ets domain transcript	3.90
	431325	AW026751	Hs.5794	ESTs, Weakly similar to 2109260A B cell	3.89
	451806	NM_003729	Hs.27076	RNA 3'-terminal phosphate cyclase	3.89
	401045				3.89
5	433023	AW864793	Hs.34161	thrombospondin 1	3.89
	452160	BE378541	Hs.279815	cysteine sulfinic acid decarboxylase-rel	3.89
	437372	AA323968	Hs.283831	hypothetical protein DKFZp547G183	3.89
	417067	AJ001417	Hs.81086	solute carrier family 22 (extraneuronal	3.88
	410467	AF102546	Hs.63931	dachshund (Drosophila) homolog	3.88
10	422660	AW297582	Hs.237062	hypothetical protein FLJ22548 similar to	3.88
	431930	AB035301	Hs.272211	cadherin 7, type 2	3.88
	453047	AW023798	Hs.286025	ESTs	3.88
	433891	AA813792		gb:nc97h03.s1 NCL_CGAP_Pr2 Homo sapiens	3.88
	401785				3.88
15	431088	AA491824	Hs.198881	ESTs	3.88
	451952	AL120173	Hs.301663	ESTs	3.87
	422089	AA523172	Hs.103135	ESTs, Weakly similar to SFR4_HUMAN SPLIC	3.87
	452277	AL049013	Hs.28783	KIAA1223 protein	3.87
	438279	AA805166	Hs.165165	HIV-1 rev binding protein 2	3.86
20	458229	AI929602	Hs.177	phosphatidylinositol glycan, class H	3.86
	406414				3.86
	417183	AI922189	Hs.288390	hypothetical protein FLJ22795	3.85
	413174	AA723564	Hs.191343	ESTs	3.85
	433332	AI367347	Hs.127809	Homo sapiens clone TCCCTA00151 mRNA sequ	3.85
25	411089	AA456454	Hs.118637	cell division cycle 2-like 1 (PITSLRE pr	3.85
	412494	AL133900	Hs.792	ADP-ribosylation factor domain protein 1	3.84
	413530	AA130158	Hs.19977	ESTs, Moderately similar to ALU8_HUMAN A	3.84
	459592	AL037421	Hs.208746	ESTs, Moderately similar to pot. ORF I [	3.84
	418329	AW247430	Hs.84152	cystathionine-beta-synthase	3.83
30	451488	AW503398	Hs.210047	ESTs, Moderately similar to I38022 hypot	3.83
	434804	AA849530		gb:ns44f05.s1 NCL_CGAP_Alv1 Homo sapiens	3.83
	401819				3.82
	424179	F30712		Homo sapiens, clone IMAGE:4285740, mRNA	3.82
35	424850	AA151057	Hs.153498	chromosome 18 open reading frame 1	3.82
	426472	BE248138	Hs.30853	ESTs	3.82
	426625	T78300	Hs.171409	serologically defined colon cancer antig	3.82
	427585	D31152	Hs.179729	collagen, type X, alpha 1 (Schmid metaph	3.82
	427756	AI376540	Hs.15574	ESTs	3.82
	444701	AI918512	Hs.188394	ESTs	3.82
40	423052	M28214	Hs.123072	RAB3B, member RAS oncogene family	3.82
	429259	AA420450	Hs.292911	ESTs, Highly similar to S60712 band-6-pr	3.82
	416111	AA033813	Hs.79018	chromatin assembly factor 1, subunit A (	3.82
	433588	T85301		gb:yd78d06.s1 Soares fetal liver spleen	3.81
45	438527	AI969251	Hs.143237	RAB7, member RAS oncogene family-like 1	3.81
	410297	AA148710	Hs.159441	lumican	3.81
	429898	AW117322	Hs.42366	ESTs	3.81
	409079	W87707	Hs.82065	interleukin 6 signal transducer (gp130,	3.80
	419423	D26488	Hs.90315	KIAA0007 protein	3.80
	429843	AA455889	Hs.187548	FYVE-finger-containing Rab5 effector pro	3.80
50	431499	NM_001514	Hs.258561	general transcription factor IIB	3.80
	445060	AA830811	Hs.88808	ESTs	3.80
	449419	R34910	Hs.119172	ESTs	3.80
	450584	AA040403	Hs.60371	ESTs	3.80
55	426137	AL040683	Hs.187031	DKFZP566D133 protein	3.79
	420185	AL044056	Hs.158047	ESTs	3.79
	410076	T05387	Hs.7991	ESTs	3.78
	444078	BE246919	Hs.10290	U5 snRNP-specific 40 kDa protein (hPrp8-	3.78
	417318	AW953937	Hs.12891	ESTs	3.78
	414684	AA587775	Hs.68295	multi-PDZ-domain-containing protein	3.78
60	410275	U85658	Hs.61796	transcription factor AP-2 gamma (activat	3.77
	410503	AW975746	Hs.188662	KIAA1702 protein	3.77
	434170	AA626509	Hs.122329	ESTs	3.77
	421838	AW881089	Hs.108806	Homo sapiens mRNA; cDNA DKFZp568M0947 (f	3.77
	425268	AI807883	Hs.156932	Homo sapiens cDNA FLJ20653 fis, clone KA	3.76
65	431696	AA259068	Hs.267819	protein phosphatase 1, regulatory (inhib	3.76
	411990	AW963824	Hs.31707	ESTs, Weakly similar to YEW4_YEAST HYPOT	3.76
	430291	AV660345	Hs.238126	CGI-49 protein	3.76
	448779	BE042877	Hs.177135	ESTs	3.76
	452882	AA456193	Hs.155606	progesterone membrane binding protein	3.75

5	452598	AI831594	Hs.68647	ESTs, Weakly similar to ALU7_HUMAN ALU S	3.75
	439498	AA908731	Hs.58297	CLL18 protein	3.75
	440258	AI741633	Hs.125350	ESTs	3.74
	456848	AL121087	Hs.296406	KIAA0685 gene product	3.74
	415082	AA160000	Hs.137396	ESTs, Weakly similar to JC5238 galactosy	3.74
10	420653	AI224532	Hs.88550	ESTs	3.74
	431637	AI879330	Hs.265960	hypothetical protein FLJ10563	3.74
	440411	N30256	Hs.156971	hypothetical protein DKFZp434G1415	3.74
	405917				3.74
	419440	AB020689	Hs.90419	KIAA0882 protein	3.74
15	451230	BE546208	Hs.26090	hypothetical protein FLJ20272	3.73
	429597	NM_003816	Hs.2442	a disintegrin and metalloproteinase doma	3.73
	430144	AI732722	Hs.187694	ERGL protein; ERGIC-53-like protein	3.72
	438394	BE378623	Hs.27693	peptidylprolyl isomerase (cyclophilin)-I	3.72
	440527	AV657117	Hs.184184	ESTs, Moderately similar to S65657 alpha	3.72
20	449433	AI672098	Hs.9012	ESTs, Weakly similar to S26650 DNA-bindi	3.72
	456228	BE503227	Hs.134759	ESTs	3.72
	448663	BE514599	Hs.106823	hypothetical protein MGC14797	3.72
	415075	L27479	Hs.77889	Friedreich ataxia region gene X123	3.72
	433544	AI793211	Hs.165372	ESTs, Moderately similar to ALU1_HUMAN A	3.71
25	418293	AI224483	Hs.18063	hypothetical protein FLJ21877	3.71
	449897	AW819842	Hs.24135	transmembrane protein vezatin; hypotheti	3.71
	420297	AI628272	Hs.88323	ESTs, Weakly similar to ALU1_HUMAN ALU S	3.70
	423065	R96158	Hs.194606	Homo sapiens, clone MGC5406, mRNA, comp	3.70
	428340	N35938	Hs.199429	Homo sapiens mRNA; cDNA DKFZp434M2216 (f	3.70
30	437777	AA768098	Hs.189079	ESTs	3.70
	440351	AF030933	Hs.7179	RAD1 (S. pombe) homolog	3.70
	443603	BE502601	Hs.134289	ESTs, Weakly similar to KIAA1063 protein	3.70
	446965	BE242873	Hs.16677	WD repeat domain 15	3.70
	412350	AI659306	Hs.73826	protein tyrosine phosphatase, non-recept	3.70
35	433852	AI378329	Hs.126629	ESTs	3.70
	433142	AL120697	Hs.110640	ESTs	3.69
	418994	AA282881	Hs.190057	ESTs	3.69
	412628	AI972402	Hs.173902	hypothetical protein MGC2648	3.69
	431416	AA532718	Hs.178604	ESTs	3.69
40	439444	AI277652	Hs.54578	ESTs, Weakly similar to I38022 hypotheti	3.68
	414709	AA704703	Hs.77031	Sp2 transcription factor	3.68
	447397	BE247676	Hs.18442	E-1 enzyme	3.68
	405718				3.68
	425217	AU076696	Hs.155174	CDC5 (cell division cycle 5, S. pombe, h	3.68
45	442242	AV647908	Hs.90424	Homo sapiens cDNA: FLJ23265 fis, clone H	3.68
	424690	BE538356	Hs.151777	eukaryotic translation initiation factor	3.68
	421734	AI318624	Hs.107444	Homo sapiens cDNA FLJ20562 fis, clone KA	3.67
	427221	L15409	Hs.174007	von Hippel-Lindau syndrome	3.67
	439884	AI720078	Hs.291997	ESTs, Weakly similar to A47582 B-cell gr	3.66
50	402408				3.66
	426327	W03242	Hs.44898	Homo sapiens clone TCCCTA00151 mRNA sequ	3.66
	427119	AW880562	Hs.114574	ESTs	3.66
	427356	AW023482	Hs.97849	ESTs	3.66
	452946	X95425	Hs.31092	EphA5	3.66
55	419078	M93119	Hs.89584	Insulinoma-associated 1	3.66
	416295	AI064824	Hs.193385	ESTs	3.65
	427144	X95097	Hs.2128	vasoactive intestinal peptide receptor 2	3.65
	447500	AI381800	Hs.159212	ESTs	3.65
	453127	AI696671	Hs.294110	ESTs	3.65
60	423396	AI382555	Hs.127950	bromodomain-containing 1	3.65
	419346	AI830417		polybromo 1	3.64
	441540	C01367	Hs.127128	ESTs	3.64
	448501	AI302616	Hs.150819	ESTs	3.64
	459527	AW977556	Hs.291735	ESTs, Weakly similar to I78885 serine/th	3.63
65	446320	AF126245	Hs.14791	acyl-Coenzyme A dehydrogenase family, me	3.63
	435706	W31254	Hs.7045	GL004 protein	3.63
	400110				3.62
	410313	R10305	Hs.185683	ESTs	3.62
	414713	BE465243	Hs.12664	ESTs	3.62
	436279	AW900372	Hs.180793	ESTs, Weakly similar to S65657 alpha-1C-	3.62
	439818	AL360137	Hs.19934	Homo sapiens mRNA full length insert cDN	3.62
	451797	AW663858	Hs.56120	small inducible cytokine subfamily E, me	3.62
	451294	AI457338	Hs.29894	ESTs	3.62

	434194	AF118847	Hs.283940	Homo sapiens PRO1550 mRNA, partial cds	3.62
	404939				3.62
	408101	AW968504	Hs.123073	CDC2-related protein kinase 7	3.62
5	435846	AA700870	Hs.14304	ESTs	3.61
	432833	N51075	Hs.47191	ESTs	3.61
	427276	AA400269	Hs.49598	ESTs	3.61
	433495	AW373784	Hs.71	alpha-2-glycoprotein 1, zinc	3.60
	403137				3.60
	404165				3.60
10	409571	AA504249	Hs.187585	ESTs	3.60
	410561	BE540255	Hs.6994	Homo sapiens cDNA: FLJ22044 fis, clone H	3.60
	412924	BE018422	Hs.75258	H2A histone family, member Y	3.60
	434228	Z42047	Hs.283978	Homo sapiens PRO2751 mRNA, complete cds	3.60
	436797	AA731491	Hs.178518	hypothetical protein MGC14879	3.60
15	437162	AW005505	Hs.5464	thyroid hormone receptor coactivating pr	3.60
	437444	H46008	Hs.31518	ESTs	3.60
	404210				3.59
	446157	BE270828	Hs.131740	Homo sapiens cDNA: FLJ22562 fis, clone H	3.59
	437587	A591222	Hs.122421	Human DNA sequence from clone RP1-187J11	3.58
20	423147	AA987927	Hs.131740	Homo sapiens cDNA: FLJ22562 fis, clone H	3.57
	452226	AA024898	Hs.296002	ESTs	3.56
	443775	AF291684	Hs.204732	matrix metalloproteinase 26	3.56
	452501	AB037791	Hs.29716	hypothetical protein FLJ10980	3.56
	428647	AA830050	Hs.124344	ESTs	3.56
25	422443	NM_014707	Hs.116753	histone deacetylase 7B	3.55
	447966	AA340605	Hs.105887	ESTs, Weakly similar to Homolog of rat Z	3.55
	420892	AW975076	Hs.172589	nuclear phosphoprotein similar to S. cer	3.55
	420230	AL034344	Hs.298020	forkhead box C1	3.55
	418428	Y12490	Hs.85092	thyroid hormone receptor interactor 11	3.54
30	428949	AA442153	Hs.104744	hypothetical protein DKFZp434J0617	3.54
	444929	AI685841	Hs.161354	ESTs	3.54
	433339	AF019226	Hs.8036	glioblastoma overexpressed	3.54
	424369	R87622	Hs.26714	KIAA1831 protein	3.54
	433002	AF048730	Hs.279906	cyclin T1	3.53
35	435425	H16263	Hs.31416	ESTs	3.53
	415621	AI648602	Hs.131189	ESTs	3.53
	416974	AF010233	Hs.80667	RALBP1 associated Eps domain containing	3.53
	405793				3.52
	409770	AW499536		gb:U1-HF-BR0p-ajl-c-12-0-U1.r1 NIH_MGC_5	3.52
40	425305	AA363025	Hs.155572	Human clone 23801 mRNA sequence	3.52
	428939	AW236550	Hs.131914	ESTs	3.52
	438388	AA806349	Hs.44698	ESTs	3.52
	443703	AV646177	Hs.213021	ESTs	3.52
	457940	AL360159	Hs.30445	Homo sapiens TRIPartite motif protein ps	3.52
45	402444				3.52
	409643	AW450866	Hs.257359	ESTs	3.51
	418250	U29926	Hs.83918	adenosine monophosphate deaminase (isofo	3.51
	432745	AI821926	Hs.269507	gb:m178f05.x5 NCL_CGAP_P13 Homo sapiens	3.51
	414222	AL135173	Hs.878	sorbitol dehydrogenase	3.51
50	430061	AB037817	Hs.230188	KIAA1396 protein	3.51
	421491	H99999	Hs.42736	ESTs	3.50
	422384	AA224077	Hs.42438	Sm protein F	3.50
	434565	T52172		ESTs	3.50
	438379	N23018	Hs.171391	C-terminal binding protein 2	3.50
55	439741	BE379646	Hs.6904	Homo sapiens mRNA full length insert cDN	3.50
	447311	R37010	Hs.33417	Homo sapiens cDNA: FLJ22806 fis, clone K	3.50
	447805	AW627932	Hs.19614	gemin4	3.50
	454265	H03556	Hs.300949	ESTs, Weakly similar to thyroid hormone	3.50
	418938	AW385224	Hs.35198	ectonucleotide pyrophosphatase/phosphodi	3.50
60	448804	AW512213	Hs.42500	ADP-ribosylation factor-like 5	3.50
	409617	BE003760	Hs.55209	Homo sapiens mRNA; cDNA DKFZp434K0514 (f	3.49
	434075	AW003416	Hs.160604	ESTs	3.49
	444190	AI878918	Hs.10526	cysteine and glycine-rich protein 2	3.49
	435017	AA336522	Hs.12854	angiotensin II, type I receptor-associat	3.48
65	423445	NM_014324	Hs.128749	alpha-methylacyl-CoA racemase	3.48
	420271	AI954365	Hs.42892	ESTs	3.48
	443884	AI681307	Hs.166674	ESTs	3.48
	444168	AW379979		gb:JC1-HT0256-081199-011-f01 HT0256 Homo	3.48
	446074	AA079799	Hs.29263	hypothetical protein FLJ11896	3.48

	452582	AL137407	Hs.29911	Homo sapiens mRNA; cDNA DKFZp434M232 (fr	3.48
	431542	H63010	Hs.5740	ESTs	3.48
	432697	AW975050	Hs.293892	ESTs, Weakly similar to ALU4_HUMAN ALU S	3.48
	435572	AW975339	Hs.239828	ESTs, Weakly similar to GAG2_HUMAN RETRO	3.47
5	407192	AA609200		gb:af112e02.s1 Soares_testis_NHT Homo sap	3.47
	413435	X51405	Hs.75360	carboxypeptidase E	3.46
	447210	AF035269	Hs.17752	phosphatidylserine-specific phospholipase	3.46
	447958	AW798524	Hs.68844	Homo sapiens microsomal signal peptidase	3.46
	425312	AA354940	Hs.145958	ESTs	3.46
10	442007	AA301118	Hs.142838	nucleolar phosphoprotein Nopp34	3.46
	417455	AW007066	Hs.18949	ESTs, Weakly similar to CA2B_HUMAN COLLA	3.45
	426931	NM_003416	Hs.2076	zinc finger protein 7 (KDX 4, clone HF.1	3.45
	408739	W01556	Hs.238787	ESTs, Moderately similar to I38022 hypot	3.45
	436024	AI800041	Hs.190555	ESTs	3.45
15	408418	AW963897	Hs.44743	KIAA1435 protein	3.45
	409151	AA306105	Hs.50785	SEC22, vesicle trafficking protein (S. c	3.44
	418626	AW299508	Hs.135230	ESTs	3.44
	420560	AW207748	Hs.59115	ESTs	3.44
	420686	AI950339	Hs.40782	ESTs	3.44
20	428570	AA436831	Hs.36049	ESTs	3.44
	436754	AI061288	Hs.133437	ESTs	3.44
	437960	AI669586	Hs.222194	ESTs	3.44
	452300	AW628045	Hs.28896	Homo sapiens mRNA full length insert cDN	3.44
25	421887	AW161450	Hs.109201	CGI-86 protein	3.44

**TABLE 5A** shows the accession numbers for those primekeys lacking a unigeneID in Tables 5, 6, and 7. For each probeset we have listed the gene cluster number from which the oligonucleotides were designed. Gene clusters were compiled using sequences derived from Genbank ESTs and mRNAs. These sequences were clustered based on sequence similarity using Clustering and Alignment Tools (DoubleTwist, Oakland California). The Genbank accession numbers for sequences comprising each cluster are listed in the "Accession" column.

10	Pkey: CAT number: Accession:	Unique Eos probeset identifier number	
		Gene cluster number	Genbank accession numbers
	Pkey	CAT number	Accession
	407596	1003489_1	R86913 R86901 H25352 R01370 H43764 AW044451 W21298
	408432	1058667_1	AW195262 R27868 AW811262
15	409752	115301_1	AW963990 AA078196 AW749482 AA077468 BE151571 AA376917
	409770	1154048_1	AW499536 AW499553 AW502138 AW499537 AW502136 AW501743
	411440	124577_1	AW749402 AW749403 Z45743 R80376 AA093358
	411479	1247077_1	AW848047 AW848202 AW848631 AW848142 AW848702 AW848121 AW848632 AW848140 AW848571
			AW848009 AW848067 AW848069 AW848905 AW848214
20	411624	1252166_1	BE145964 BE146286 AW854564
	412991	134248_1	AW849013 AA126111
	414269	143133_1	AA298489 AA137165
	415123	1523390_1	D60925 D60828 D80787
	415715	1548818_1	F30364 F36559 T15435
25	416288	1585983_1	H51299 H44619 H46391 R86024 H51892 T72744
	416289	1586037_1	W26333 R05358 H44682
	417730	1695795_1	Z44761 R25801 R11926 R35604
	418636	177402_1	AW749855 AA225995 AW750208 AW750206
	419346	184129_1	AI830417 AA236612
30	419536	185688_1	AA803305 AA244095 AA244183
	420111	190755_1	AA255652 AA280911 AW967920 AA262684
	422219	213547_1	AW878073 AW978072 AA807550 AA306587
	424179	236389_1	F30712 F35665 AW263888 AI904014 AI904018 AA336927 AA336502
	424242	237181_1	AA337476 AW966227 AA450376 AW960222 AA381051
35	428002	285602_1	AA418703 AA418711 BE071915 BE071920 BE071912
	429163	300543_1	AA884766 AW974271 AA592975 AA447312
	432189	342819_1	AA527941 AI810608 AI620180 AA835266
	432340	345248_1	AA534222 AA632632 T81234
	432363	345469_1	AA534489 AW970240 AW970323
40	432966	356839_1	AA650114 AW974148 AA572946
	433586	370470_1	T85301 AW517087 AA601054 BE073959
	433641	37186_1	AF080229 AF080231 AF080230 AF080232 AF080233 AF080234 BE550633 AI636743 AW614951 BE467547
			AI680833 AI633818 N29986 U87592 U87593 U87590 U87591 S46404 U87587 AA463992 AW206802 AI970376
			AI583718 AI672574 N25695 AW665466 AI818326 AA126128 AI480345 AW013827 AA248638 AI214968
45			AA204735 AA207155 AA206262 AA204833 AW003247 AW496808 AI080480 AI631703 AI651023 AI867418
			AW818140 AA502500 AI206199 AI671282 AI352545 BE501030 AI652535 BE465762 AA206331 AW451866
			AA471088 AA206342 AA204834 AA206100 AW021661 AA332922 N66048 AA703396 H92278 AW139734
			H92683 U87589 U87595 H69001 U87594 BE466420 AI624817 BE466611 AI206344 AA574397 AA348354
			AI493192
50	433687	373061_1	AA743981 AA604852 AW272737
	433891	376239_1	AA613782 AW182329 T05304 AW858385
	434415	385931_1	BE177494 AW276909 AA632849
	434565	38888_1	T52172 AF147324 T52248
	434804	393481_1	AA849530 AA659316 H64973
55	437113	433234_1	AA744683 AW750059
	444168	593829_1	AW378879 AI126285 H12014
	448212	755099_1	AI475858 AW969013
	448310	757918_1	AI480316 AW847535
	451746	883303_1	M86178 AI813822 D56993

452560	922216_1	BE077084 AW139963 AW863127 AW806209 AW806204 AW806205 AW806206 AW806211 AW806212 AW806207 AW806208 AW806210 AI907497
452712	928309_1	AW838616 AW838660 BE144343 AI914520 AW888910 BE184854 BE184784
453773	980699_1	AL133761 AL133767
5 455276	1272541_1	BE176479 BE176678 BE176357 BE176550 AW886079 BE176676 BE176615 BE176555 BE176489 BE176610 BE176362
455309	1278153_1	AW894017 AW893956 AW894032



**TABLE 5B** shows the genomic positioning for those primekeys lacking unigene ID's and accession numbers in Tables 5, 6, and 7. For each predicted exon, we have listed the genomic sequence source used for prediction. Nucleotide locations of each predicted exon are also listed.

10	Pkey:	Unique number corresponding to an Eos probeset		
	Ref:	Sequence source. The 7 digit numbers in this column are Genbank Identifier (GI) numbers. "Dunham I. et al." refers to the publication entitled "The DNA sequence of human chromosome 22." Dunham I. et al., Nature (1999) 402:489-495.		
	Strand:	Indicates DNA strand from which exons were predicted.		
	Nt_position:	Indicates nucleotide positions of predicted exons.		
15				
	Pkey	Ref	Strand	Nt_position
20	401045	8117619	Plus	90044-80184,91111-91345
	401424	8176894	Plus	24223-24428
	401451	6634068	Minus	119926-121272
	401714	6715702	Plus	98484-98681
	401747	9789672	Minus	118596-118816,119119-119244,119609-119761,120422-120990,130161-130381,130468-130593,131097-131258,131868-131932,132451-132575,133580-134011
25	401785	7249190	Minus	165776-165996,166189-166314,166408-166569,167112-167268,167387-167469,168634-168942
	401819	7467933	Minus	28217-28486
	402408	9786239	Minus	110326-110491
	402444	9786614	Plus	28391-28517
	402791	6137008	Minus	51036-51207
30	403047	3540153	Minus	59793-59968
	403137	9211494	Minus	92349-92572,92858-93084,93579-93712,93949-94072,94591-94748,95214-95337
	403721	7528046	Minus	156647-157366
	403764	7717105	Minus	118692-118853
	403797	8098896	Minus	123065-125008
35	404165	8926489	Minus	69025-69128
	404210	5006246	Plus	169926-170121
	404253	9367202	Minus	55675-56055
	404561	9795980	Minus	69039-70100
	404571	7249169	Minus	112450-112648
40	404721	9856648	Minus	173763-174294
	404915	7341766	Minus	100915-101087
	404939	6862697	Plus	175318-175476
	405403	6850244	Minus	37491-37670,40951-41031
	405685	4508129	Minus	37956-38097
45	405718	9795467	Plus	113080-113266
	405793	1405887	Minus	89197-89453
	405876	6758747	Plus	39594-40031
	405917	7712162	Minus	106829-107213
	406414	9256407	Plus	49593-49850
50	406554	7711566	Plus	106956-107121

**TABLE 6:286 GENES ENCODING EXTRACELLULAR OR CELL SURFACE PROTEINS UP-REGULATED IN PROSTATE CANCER COMPARED TO NORMAL ADULT TISSUES**

5 Table 6 shows 286 genes up-regulated in prostate cancer compared to normal adult tissues that are likely to be extracellular or cell-surface proteins. These were selected as for Table 5 and the predicted protein contained a structural domain that is indicative of extracellular localization (e.g. egf, 7tm domains).

	Pkey:	ExAccn:	UnigeneID:	Unigene Title:	R1:
	Uniqua Eos probeset identifier number	Exemplar Accession number, Genbank accession number	Unigene number	Unigene gene title	Ratio of tumor to normal tissue
10	Pkey	ExAccn	UnigeneID	Unigene Title	R1
	409361	NM_005982	Hs.54416	sine oculis homeobox (Drosophila) homolo	48.28
	409731	AA125985	Hs.56145	thymosin, beta, identified in neuroblast	45.24
	400298	AA032279	Hs.61635	six transmembrane epithelial antigen of	43.48
15	420154	AI093155	Hs.85420	JM27 protein	41.12
	426747	AA535210	Hs.171995	kallikrein 3, (prostate specific antigen	31.80
	400299	X07730	Hs.171995	kallikrein 3, (prostate specific antigen	24.91
	425075	AA506324	Hs.1852	acid phosphatase, prostate	24.23
	424846	AU077324	Hs.1832	neuropeptide Y	23.57
20	405685				20.90
	420757	X78592	Hs.99915	androgen receptor (dihydrotestosterone r	19.72
	418994	AA296520	Hs.89546	selectin E (endothelial adhesion molecu	19.56
	452782	AB037765	Hs.30652	KIAA1344 protein	17.39
	445472	AB006631	Hs.12784	Homo sapiens mRNA for KIAA0293 gene, par	17.00
25	414565	AA502972	Hs.183390	hypothetical protein FLJ13590	16.82
	431716	D89053	Hs.268012	fatty-acid-Coenzyme A ligase, long-chain	16.60
	408430	S78878	Hs.44928	dipeptidylpeptidase IV (CD26, adenosine	16.28
	408000	L11690	Hs.620	bullous pemphigoid antigen 1 (230/240kD)	15.54
	430226	BE245562	Hs.2551	adrenergic, beta-2-, receptor, surface	15.40
30	444484	AK002126	Hs.11280	hypothetical protein FLJ11264	14.76
	418601	AA279490	Hs.86368	calmagin	14.56
	448999	AF179274	Hs.22791	transmembrane protein with EGF-like and	14.55
	416182	NM_004354	Hs.79069	cydin G2	12.94
	420544	AA677577	Hs.98732	Homo sapiens Chromosome 16 BAC clone CIT	12.79
35	445413	AA151342	Hs.12677	CGI-147 protein	12.64
	453930	AA419466	Hs.36727	hypothetical protein FLJ10903	12.22
	440286	U29589	Hs.7138	cholinergic receptor, muscarinic 3	12.04
	452784	BE463857	Hs.151258	hypothetical protein FLJ21062	11.86
	450203	AF097994	Hs.301528	L-kynurenine/alpha-aminoadipate aminotra	11.88
40	448045	AJ297436	Hs.20166	prostate stem cell antigen	11.51
	449650	AF055575	Hs.23838	calcium channel, voltage-dependent, L ty	11.18
	420381	D50640	Hs.337616	phosphodiesterase 3B, cGMP-inhibited	11.10
	425665	AK001050	Hs.159066	hypothetical protein FLJ10188	11.08
	425710	AF030880	Hs.159275	solute carrier family, member 4	11.08
45	428728	NM_016625	Hs.191381	hypothetical protein	11.04
	407021	U52077		gb:Human mariner1 transposase gene, comp	11.02
	410733	D84284	Hs.66052	CD38 antigen (p45)	11.02
	452340	NM_002202	Hs.505	ISL1 transcription factor, LIM/homeodoma	10.85
50	428819	AL135623	Hs.193914	KIAA0575 gene product	10.48
	421991	NM_014918	Hs.110488	KIAA0990 protein	10.04
	431217	NM_013427	Hs.250830	Rho GTPase activating protein 6	9.75
	421470	R27496	Hs.1378	annexin A3	9.64
	409262	AK000631	Hs.52256	hypothetical protein FLJ20624	9.45
	435980	AF274571	Hs.129142	deoxyribonuclease II beta	9.24
55	421246	AW582962	Hs.102897	CGI-47 protein	9.20
	410001	AB041036	Hs.57771	kallikrein 11	9.03
	441791	AW372449	Hs.175982	hypothetical protein FLJ21159	9.02

	404571				8.68
	456497	AW867956	Hs.123648	ESTs, Weakly similar to AF108460 1 ubinu	8.56
	419968	X04430	Hs.93913	Interleukin 6 (interferon, beta 2)	8.36
	433172	AB037841	Hs.102652	hypothetical protein ASH1	8.30
5	422631	BE218919	Hs.118793	hypothetical protein FLJ10688	8.27
	427674	NM_003528	Hs.2178	H2B histone family, member Q	8.20
	404915				8.08
	452259	AA317439	Hs.28707	signal sequence receptor, gamma (translo	8.06
	452891	N75582	Hs.212875	ESTs, Weakly similar to DYH9_HUMAN CILIA	8.02
10	439731	AI953135	Hs.45140	hypothetical protein FLJ14084	7.98
	419839	U24577	Hs.93304	phospholipase A2, group VII (platelet-ac	7.68
	420120	AL049610	Hs.95243	transcription elongation factor A (SII)-	7.64
	424099	AF071202	Hs.138336	ATP-binding cassette, sub-family C (CFTR	7.64
	448706	AW291095	Hs.21814	interleukin 20 receptor, alpha	7.52
15	410227	AB009284	Hs.61152	exostoses (multiple)-like 2	7.49
	425211	M18667	Hs.1887	progastricsin (pepsinogen C)	7.35
	441736	AW292779	Hs.169799	ESTs	7.28
	419891	AJ000098	Hs.94210	eyes absent (Drosophila) homolog 1	7.20
	425018	BE245277	Hs.154196	E4F transcription factor 1	7.20
20	424560	AA158727	Hs.150555	protein predicted by clone 23733	7.18
	409110	AA191493	Hs.48778	niban protein	7.10
	421566	NM_000399	Hs.1395	early growth response 2 (Krox-20 (Drosop	7.04
	431725	X65724	Hs.2839	Norrie disease (pseudoglioma)	6.98
	425782	U66468	Hs.159525	cell growth regulatory with EF-hand doma	6.85
25	427408	AA583206	Hs.2156	RAR-related orphan receptor A	6.79
	435604	AA625279	Hs.26892	uncharacterized bone marrow protein BM04	6.73
	415874	AF091622	Hs.78893	KIAA0244 protein	6.54
	401451				6.52
	431778	AL080276	Hs.268562	regulator of G-protein signalling 17	6.51
30	409089	NM_014781	Hs.50421	KIAA0203 gene product	6.50
	431992	NM_002742	Hs.2891	protein kinase C, mu	6.49
	404253				6.42
	421552	AF026692	Hs.105700	secreted frizzled-related protein 4	6.41
	416806	NM_000288	Hs.79993	peroxisomal biogenesis factor 7	6.38
35	431958	X63629	Hs.2877	cadherin 3, type 1, P-cadherin (placenta	6.30
	439366	AF100143	Hs.6540	fibroblast growth factor 13	6.30
	416836	D54745	Hs.80247	cholecystokinin	6.30
	433383	AF034837	Hs.182731	double-stranded RNA specific adenosine d	6.29
	450728	AW162923	Hs.25363	presenilin 2 (Alzheimer disease 4)	6.25
40	413384	NM_000401	Hs.75334	exostoses (multiple) 2	6.22
	423349	AF010258	Hs.127428	homeo box A9	6.20
	424800	AL035588	Hs.153203	MyoD family inhibitor	6.18
	425451	AF242769	Hs.157461	mesenchymal stem cell protein DSC54	6.14
	447359	NM_012093	Hs.18268	adenylate kinase 5	6.00
45	410889	X91662	Hs.66744	twist (Drosophila) homolog (acrocephalos	5.97
	408829	NM_008042	Hs.48384	heparan sulfate (glucosamine) 3-O-sulfot	5.94
	453911	AW503857	Hs.4007	Sarcolemmal-associated protein	5.94
	408875	NM_015434	Hs.48604	DKFZP434B168 protein	5.92
	450480	X82125	Hs.25040	zinc finger protein 239	5.90
50	451684	AF216751	Hs.26813	CDA14	5.88
	400301	X03635	Hs.1657	estrogen receptor 1	5.78
	415077	L41607	Hs.934	glucosaminyl (N-acetyl) transferase 2, I	5.74
	418852	BE537037	Hs.273294	hypothetical protein FLJ20069	5.72
	446867	AB007891	Hs.16349	KIAA0431 protein	5.72
55	410232	AW372451	Hs.61184	CGI-79 protein	5.70
	422762	AL031320	Hs.119976	Human DNA sequence from clone RP1-20N2 o	5.70
	450616	AL133067	Hs.302689	hypothetical protein	5.70
	408621	AI970672	Hs.46638	chromosome 11 open reading frame 8	5.65
	439671	AW162840	Hs.6641	kinesin family member 5C	5.64
60	410196	AI938442	Hs.59838	hypothetical protein FLJ10808	5.60
	429170	NM_001394	Hs.2359	dual specificity phosphatase 4	5.60
	440738	AI004650	Hs.225674	WD repeat domain 9	5.60
	414342	AA742181	Hs.75912	KIAA0257 protein	5.59
	422634	NM_016010	Hs.118821	CGI-62 protein	5.56
65	400268				5.55
	439569	AW602166	Hs.222399	CEGP1 protein	5.51
	452823	AB012124	Hs.30696	transcription factor-like 5 (basic helix	5.48
	431938	AA938471	Hs.54431	specific granule protein (28 kDa); cyste	5.44
	427638	AA408411	Hs.208341	ESTs, Weakly similar to KIAA0989 protein	5.42

5	421264	AL039123	Hs.103042	microtubule-associated protein 1B	5.38
	421685	AF189723	Hs.106778	ATPase, Ca++ transporting, type 2C, memb	5.37
	421987	AI133161	Hs.288131	CGI-101 protein	5.36
	422806	BE314787	Hs.1581	glutathione S-transferase theta 2	5.34
	432281	AK001239	Hs.274263	hypothetical protein FLJ10377	5.32
	451982	F13036	Hs.27373	Homo sapiens mRNA; cDNA DKFZp564O1763 (f	5.32
	444042	NM_004915	Hs.10237	ATP-binding cassette, sub-family G (WHIT	5.31
	447752	M73700	Hs.105938	lactotransferrin	5.29
	451418	BE387790	Hs.26369	hypothetical protein FLJ20287	5.22
10	428593	AW207440	Hs.185973	degenerative spermatocyte (homolog Dros	5.21
	447541	AK000288	Hs.18800	hypothetical protein FLJ20281	5.18
	459294	AW977286	Hs.17428	RBP1-like protein	5.16
	424692	AA428834	Hs.151791	KIAA0092 gene product	5.15
	416434	AW163045	Hs.79334	nuclear factor, interleukin 3 regulated	5.11
15	410268	AA316181	Hs.61635	six transmembrane epithelial antigen of	5.10
	417517	AF001176	Hs.82238	POP4 (processing of precursor, S. cerev	5.10
	453616	NM_003462	Hs.33946	dynein, axonemal, light intermediate pol	5.10
	427958	AA418000	Hs.98280	potassium intermediate/small conductance	5.09
	407945	X69208	Hs.606	ATPase, Cu++ transporting, alpha polypep	5.08
20	418576	AK688159	Hs.289104	Aku-binding protein with zinc finger dom	5.05
	413328	Y15723	Hs.75295	guanylate cyclase 1, soluble, alpha 3	5.04
	432729	AK000292	Hs.278732	hypothetical protein FLJ20285	5.04
	426342	AF093419	Hs.169378	multiple PDZ domain protein	5.02
	429782	NM_005754	Hs.220689	Ras-GTPase-activating protein SH3-domain	5.02
25	436209	AW850417	Hs.254020	ESTs, Moderately similar to unnamed prot	5.02
	430599	NM_004855	Hs.247118	phosphatidylinositol glycan, class B	5.00
	451386	AB029006	Hs.26334	spastic paraplegia 4 (autosomal dominant	5.00
	457211	AW972565	Hs.32399	ESTs, Weakly similar to S51797 vasodilat	4.97
	425851	NM_001490	Hs.159642	glucosaminyl (N-acetyl) transferase 1, c	4.97
30	421689	N87820	Hs.106826	KIAA1696 protein	4.93
	416533	BE244053	Hs.79362	retinoblastoma-like 2 (p130)	4.92
	432653	N62096	Hs.293185	ESTs, Weakly similar to JC7328 amino aci	4.91
	403047				4.91
	431117	AF003522	Hs.250500	delta (Drosophila)-like 1	4.90
35	427617	D42063	Hs.199179	RAN binding protein 2	4.88
	428804	AK000713	Hs.193736	hypothetical protein FLJ20706	4.88
	449071	NM_005872	Hs.22960	breast carcinoma amplified sequence 2	4.86
	407596	R86913		gblyq30f05.r1 Soares fetal liver spleen	4.84
	456516	BE172704	Hs.222746	KIAA1610 protein	4.84
40	458339	AW976853	Hs.172843	ESTs	4.83
	422083	NM_001141	Hs.111258	arachidonate 15-lipoxygenase, second typ	4.82
	449535	W15267	Hs.23672	low density lipoprotein receptor-related	4.82
	422048	NM_012445	Hs.288126	spondin 2, extracellular matrix protein	4.82
	424802	AK002055	Hs.151048	hypothetical protein FLJ11193	4.78
45	410765	AI694972	Hs.68180	nucleosome assembly protein 1-like 2	4.77
	419879	Z17805	Hs.93564	Homer, neuronal immediate early gene, 2	4.74
	450649	NM_001429	Hs.25272	E1A binding protein p300	4.74
	411624	BE145984	Hs.103283	KIAA0594 protein	4.72
	404721				4.70
50	428261	AW242243	Hs.168670	peroxisomal farnesylated protein	4.70
	416276	U41060	Hs.79136	LIV-1 protein, estrogen regulated	4.64
	408374	AW025430	Hs.155591	forkhead box F1	4.64
	451900	AB023199	Hs.27207	KIAA0982 protein	4.63
	421437	AW821252	Hs.104336	hypothetical protein	4.63
55	434629	AA789081	Hs.4029	glioma-amplified sequence-41	4.60
	403764				4.58
	421247	BE391727	Hs.102910	general transcription factor IIH, polype	4.53
	403721				4.50
	453070	AK001465	Hs.31575	SEC63, endoplasmic reticulum translocon	4.49
60	417412	X16896	Hs.82112	interleukin 1 receptor, type I	4.48
	439735	AI635386	Hs.142846	hypothetical protein	4.48
	430261	AA305127	Hs.237225	hypothetical protein HT023	4.46
	430598	AK001764	Hs.247112	hypothetical protein FLJ10902	4.44
	400303	AA242758	Hs.79136	LIV-1 protein, estrogen regulated	4.42
65	438209	AL120659	Hs.6111	aryl-hydrocarbon receptor nuclear transl	4.42
	417421	AL138201	Hs.82120	nuclear receptor subfamily 4, group A, m	4.40
	447270	AC002551	Hs.331	general transcription factor IIIC, polyp	4.38
	434423	NM_006769	Hs.3844	LIM domain only 4	4.35
	404561				4.32

5	422969	AA782536	Hs.122647	N-myristoyltransferase 2	4.32
	423685	BE350494	Hs.49753	uveal autoantigen with coiled coil domain	4.32
	425071	NM_013989	Hs.154424	deiodinase, iodothyronine, type II	4.32
	431583	AL042613	Hs.262476	S-adenosylmethionine decarboxylase 1	4.31
	442818	AK001741	Hs.8739	hypothetical protein FLJ10879	4.30
10	423740	Y07701	Hs.293007	aminopeptidase puromycin sensitive	4.24
	424701	NM_005923	Hs.151988	mitogen-activated protein kinase kinase	4.21
	424085	NM_002914	Hs.139226	replication factor C (activator 1) 2 (40	4.20
	410294	AB014515	Hs.323712	KIAA0615 gene product	4.18
	447124	AW976438	Hs.17428	RBP1-like protein	4.18
15	439018	AK001160	Hs.5999	hypothetical protein FLJ10298	4.16
	443857	AI089292	Hs.287621	hypothetical protein FLJ14069	4.15
	446711	AF169692	Hs.12450	protocadherin 9	4.15
	405403				4.14
	448148	NM_016578	Hs.20509	HBV pX associated protein-8	4.13
20	417531	NM_003157	Hs.1087	serine/threonine kinase 2	4.12
	433345	AI681545	Hs.152982	hypothetical protein FLJ13117	4.10
	432712	AB016247	Hs.288031	sterol-C5-desaturase (fungal ERG3, delta	4.09
	435114	AA775483	Hs.288936	mitochondrial ribosomal protein L9	4.08
	445459	AA78629	Hs.158465	likely ortholog of mouse putative IKK re	4.08
25	402791				4.04
	438660	U95740	Hs.6349	Homo sapiens, clone IMAGE:3010656, mRNA,	4.04
	447568	AF155655	Hs.18885	CGI-116 protein	4.04
	452211	AI985513	Hs.233420	ESTs	4.02
	443292	AK000213	Hs.9196	hypothetical protein	4.01
30	420911	U77413	Hs.100293	O-linked N-acetylglucosamine (GlcNAc) tr	4.00
	428738	NM_000380	Hs.192803	xeroderma pigmentosum, complementation g	3.95
	430456	AA314998	Hs.241503	hypothetical protein	3.95
	437531	AK00752	Hs.112259	T cell receptor gamma locus	3.93
	428695	AI355647	Hs.189999	purinergic receptor (family A group 5)	3.91
35	410011	AB020841	Hs.57856	PFTAIRE protein kinase 1	3.91
	448494	AA463276	Hs.288906	VW Domain-Containing Gene	3.91
	409928	AL137163	Hs.57549	hypothetical protein dJ473B4	3.90
	411598	BE336854	Hs.70937	H3 histone family, member A	3.90
	425707	AF115402	Hs.11713	E74-like factor 5 (ets domain transcript	3.90
40	451806	NM_003729	Hs.27076	RNA 3'-terminal phosphate cyclase	3.89
	401045				3.89
	437372	AA323968	Hs.283631	hypothetical protein DKFZp547G183	3.89
	417057	AJ001417	Hs.81086	solute carrier family 22 (extraneuronal	3.88
	410467	AF102546	Hs.63931	dachshund (Drosophila) homolog	3.88
45	431930	AB035301	Hs.272211	cadherin 7, type 2	3.88
	453047	AW023798	Hs.286025	ESTs	3.88
	401785				3.88
	458229	AI829602	Hs.177	phosphatidylinositol glycan, class H	3.86
	406414				3.86
50	412494	AL133900	Hs.792	ADP-ribosylation factor domain protein 1	3.84
	418329	AW247430	Hs.84152	cystathionine-beta-synthase	3.83
	424850	AA151057	Hs.153498	chromosome 18 open reading frame 1	3.82
	427585	D31152	Hs.179729	collagen, type X, alpha 1 (Schmid metaph	3.82
	423052	M28214	Hs.123072	RAB3B, member RAS oncogene family	3.82
55	416111	AA033813	Hs.79018	chromatin assembly factor 1, subunit A (	3.82
	419423	D26488	Hs.90315	KIAA0007 protein	3.80
	429643	AA455889	Hs.167279	FYVE-finger-containing Rab5 effector pro	3.80
	431499	NM_001514	Hs.258561	general transcription factor IIB	3.80
	444078	BE246919	Hs.10290	U5 snRNP-specific 40 kDa protein (hPrp8-	3.78
60	430291	AV660345	Hs.238126	CGI-49 protein	3.76
	431637	AI879330	Hs.265960	hypothetical protein FLJ10563	3.74
	440411	N30256	Hs.151093	hypothetical protein DKFZp434G1415	3.74
	405917				3.74
	451230	BE546208	Hs.26080	hypothetical protein FLJ20272	3.73
65	429597	NM_003816	Hs.2442	a disintegrin and metalloproteinase doma	3.73
	415075	L27479	Hs.77889	Friedreich ataxia region gene X123	3.72
	440351	AF030933	Hs.7179	RAD1 (S. pombe) homolog	3.70
	443603	BE502601	Hs.134289	ESTs, Weakly similar to KIAA1063 protein	3.70
	446965	BE242873	Hs.16677	WD repeat domain 15	3.70
	412350	AI659306	Hs.73826	protein tyrosine phosphatase, non-recept	3.70
	433852	AI378329	Hs.126629	ESTs	3.70
	447397	BE247676	Hs.18442	E-1 enzyme	3.68
	405718				3.68

	425217	AU076696	Hs.155174	CDC5 (cell division cycle 5, S. pombe, h	3.68
	421734	AK18624	Hs.107444	Homo sapiens cDNA FLJ20562 fls, clone KA	3.67
	427221	L15409	Hs.174007	von Hippel-Lindau syndrome	3.67
	402408				3.66
5	452948	X95425	Hs.31092	EphA5	3.66
	419078	M93119	Hs.89584	insulinoma-associated 1	3.66
	427144	X95097	Hs.2126	vasoactive intestinal peptide receptor 2	3.65
	423396	AI382555	Hs.127850	bromodomain-containing 1	3.65
10	446320	AF126245	Hs.14791	acyl-Coenzyme A dehydrogenase family, me	3.63
	404939				3.62
	403137				3.60
	437162	AW005505	Hs.5464	thyroid hormone receptor coactivating pr	3.60
	404210				3.59
	443775	AF291664	Hs.204732	matrix metalloproteinase 26	3.56
15	452501	AB037791	Hs.29716	hypothetical protein FLJ10980	3.56
	422443	NM_014707	Hs.116753	histone deacetylase 7B	3.55
	420230	AL034344	Hs.284186	forkhead box C1	3.55
	418428	Y12490	Hs.85092	thyroid hormone receptor interactor 11	3.54
	433002	AF048730	Hs.279906	cyclin T1	3.53
20	405793				3.52
	457940	AL360159	Hs.306517	Homo sapiens TRIPartite motif protein ps	3.52
	402444				3.52
	418250	U29926	Hs.83918	adenosine monophosphate deaminase (isofo	3.51
	414222	AL135173	Hs.878	sorbitol dehydrogenase	3.51
25	422384	AA224077	Hs.42438	Sm protein F	3.50
	447805	AW627932	Hs.18614	germin4	3.50
	454265	H03558	Hs.300949	ESTs, Weakly similar to thyroid hormone	3.50
	423445	NM_014324	Hs.128749	alpha-methylacyl-CoA racemase	3.48
	413435	X51405	Hs.75360	carboxypeptidase E	3.46
30	447210	AF035269	Hs.17752	phosphatidylserine-specific phospholipas	3.46
	426931	NM_003416	Hs.2076	zinc finger protein 7 (KOX 4, clone HF.1	3.45
	408418	AW963897	Hs.44743	KIAA1435 protein	3.45
	421887	AW161450	Hs.109201	CGI-86 protein	3.44

**Table 7: 42 GENES ENCODING SMALL MOLECULE TARGETS UP-REGULATED IN PROSTATE CANCER COMPARED TO NORMAL ADULT TISSUES**

5 Table 7 shows 42 genes up-regulated in prostate cancer compared to normal adult tissues that are likely to be small molecule targets. These were selected as for Table 5 and the predicted protein contained a structural domain that is indicative of a drugable structure (e.g. protease, kinase, phosphatase, receptor). The functional domain is indicated for each gene.

10 Pkey: Unique Eos probaset identifier number  
 ExAccn: Exemplar Accession number, Genbank accession number  
 UnigeneID: Unigene number  
 Unigene Title: Unigene gene title  
 PSDomain: Protein Structural Domain  
 15 R1: Ratio of tumor vs. normal tissue

	Pkey	ExAccn	UnigeneID	Unigene Title	PSDomain	R1
20	426747	AA535210	Hs.171895	kallikrein 3, (prostate specific antigen	trypsin	31.80
	400299	X07730	Hs.171895	kallikrein 3, (prostate specific antigen	trypsin	24.91
	420757	X78592	Hs.99915	androgen receptor (dihydrotestosterone r	Androgen_recep,hormone_rec,zf-C4	19.72
	408430	S78876	Hs.44926	dipeptidylpeptidase IV (CD26, adenosine	DPPIV_N_term,Peptidase_S9	16.28
	430226	BE245562	Hs.2551	adrenergic, beta-2-, receptor, surface	7tm_1	15.40
25	411096	U80034	Hs.68583	mitochondrial intermediate peptidase	Peptidase_M3	14.81
	440286	U28589	Hs.7138	cholinergic receptor, muscarinic 3	7tm_1	12.04
	420381	D50640	Hs.337616	phosphodiesterase 3B, cGMP-inhibited	PDEase	11.10
	407021	U52077		gb:Human mariner1 transposase gene, comp	SET,Transposase_1	11.02
	401424				arginase	9.58
30	410001	AB041036	Hs.57771	kallikrein 11	trypsin	9.03
	428330	L22524	Hs.2256	matrix metalloproteinase 7 (matrilysin,	Peptidase_M10	8.76
	424099	AF071202	Hs.139336	ATP-binding cassette, sub-family C (CFTR	ABC_tran,ABC_membrane	7.64
	419991	AJ000098	Hs.94210	eyes absent (Drosophila) homolog 1	Hydrolase	7.20
	431892	NM_002742	Hs.2891	protein kinase C, mu	pk kinase,DAG_PE-bind,PH	6.49
35	447359	NM_012093	Hs.18268	adenylate kinase 5	adenylate kinase	6.00
	400301	X03635	Hs.1657	estrogen receptor 1	Oest_recep,zf-C4,hormone_rec	5.78
	421685	AF189723	Hs.106778	ATPase, Ca++ transporting, type 2C, memb	E1-E2_ATPase,Hydrolase	5.37
	444042	NM_004915	Hs.10237	ATP-binding cassette, sub-family G (WHIT	ABC_tran	5.31
	447752	M73700	Hs.105938	lactotransferrin	transferrin,7tm_1	5.29
40	407945	X69208	Hs.606	ATPase, Cu++ transporting, alpha polypep	E1-E2_ATPase,Hydrolase,HMA	5.08
	403047				trypsin	4.91
	427617	D42063	Hs.189179	RAN binding protein 2	Ran_BP1,zf-RanBP,TPR,pro_isomerase	4.88
	422083	NM_001141	Hs.111256	arachidonate 15-lipoxygenase, second typ	lipoxygenase,PLAT	4.82
	449535	W15267	Hs.23672	low density lipoprotein receptor-related	ldl_recept_b,ldl_recept_a,EGF	4.82
45	425071	NM_013989	Hs.154424	deiodinase, iodothyronine, type II	T4_deiodinase	4.32
	423740	Y07701	Hs.293007	aminopeptidase puromycin sensitive	Peptidase_M1	4.24
	424701	NM_005923	Hs.151988	mitogen-activated protein kinase kinase	pk kinase	4.21
	424085	NM_002914	Hs.139226	replication factor C (activator 1) 2 (40	AAA,Viral_helicase1	4.20
	417531	NM_003157	Hs.1087	serine/threonine kinase 2	pk kinase	4.12
50	428695	A1355847	Hs.189999	purinergic receptor (family A group 5)	7tm_1	3.91
	410011	AB020641	Hs.57856	PFTAIR protein kinase 1	pk kinase	3.91
	424850	AA151057	Hs.153498	chromosome 18 open reading frame 1	ldl_recept_a	3.82
	412350	A1659306	Hs.73826	protein tyrosine phosphatase, non-recept	Y_phosphatase,Band_41,PDZ	3.70
	447397	BE247676	Hs.18442	E-1 enzyme	Hydrolase	3.68
55	452946	X95425	Hs.31092	EphA5	EPH_bld,fn3,pk kinase,SAM	3.66
	427144	X95097	Hs.2126	vasoactive intestinal peptide receptor 2	7tm_2	3.65
	443775	AF281664	Hs.204732	matrix metalloproteinase 26	Peptidase_M10	3.56
	457940	AL360159	Hs.306517	Homo sapiens TRIPartite motif protein ps	SPRY,7tm_1	3.52
	418250	U29926	Hs.83918	adenosine monophosphate deaminase (iso	A_deaminase	3.51
60	413435	X51405	Hs.75360	carboxypeptidase E	Zn_carbOpept	3.46
	447210	AF035269	Hs.17752	phosphatidylserine-specific phospholip	lipase	3.46

**TABLE 8: 136 GENES SIGNIFICANTLY DOWN-REGULATED IN PROSTATE CANCER COMPARED TO NORMAL PROSTATE**

Table 8 shows 136 genes significantly down-regulated in prostate cancer compared to normal prostate. These were selected from 59680 probesets on the Affymetrix/Eos Hu03 GeneChip array such that the ratio of "average" normal prostate to "average" prostate cancer tissues was greater than or equal to 2. The "average" normal prostate level was set to the mean amongst 4 normal prostate tissues. The "average" prostate cancer level was set to the 85<sup>th</sup> percentile amongst 73 tumor samples. In order to remove gene-specific background levels of non-specific hybridization, the 10<sup>th</sup> percentile value amongst all the tissues was subtracted from both the numerator and the denominator before the ratio was evaluated.

Pkey:		Unique Eos probeset identifier number		
ExAccn:		Exemplar Accession number, Genbank accession number		
UnigeneID:		Unigene number		
Unigene Title:		Unigene gene title		
R1:		Ratio of normal prostate to prostate cancer		
Pkey	ExAccn	UnigeneID	Unigene Title	R1
20	425932	M81650	Hs.1968 semenogelin I	57.69
	425545	N98529	Hs.158295 Human mRNA for myosin light chain 3 (MLC	19.70
	426752	X69490	Hs.172004 titin	15.25
	442082	R41823	Hs.7413 ESTs; calytenin-2	10.05
25	407245	X90568	Hs.172004 titin	9.38
	422711	D60641	Hs.21739 Homo sapiens mRNA; cDNA DKFZp58611518 (f	9.05
	420813	X51501	Hs.99949 prolactin-induced protein	8.18
	411987	AA375975	Hs.183380 *ESTs, Moderately similar to ALU7_HUMAN	7.45
	404567			5.62
30	416030	H15261	Hs.21948 ESTs	5.51
	444892	AI620617	Hs.148565 ESTs	5.27
	444573	AW043590	Hs.225023 ESTs	5.20
	428068	AW016437	Hs.233462 ESTs	5.08
	437440	AA846804	Hs.123694 ESTs	4.95
35	404113			4.75
	452279	AA286844	Hs.61260 hypothetical protein FLJ13164	4.75
	421058	AW297967	Hs.188181 ESTs	4.63
	445592	AV654382	Hs.17947 *ESTs, Weakly similar to K02F3.10 [C.ele	4.53
	405163			4.49
40	405227			4.45
	454059	NM_003154	Hs.37048 statherin	4.45
	450152	AI138635	Hs.22968 ESTs	4.40
	407013	U35637	"gb:Human nebulin mRNA, partial cds"	4.03
	403612			4.02
45	440089	AA864468	Hs.135646 ESTs	4.00
	408988	AL118844	Hs.49476 Homo sapiens clone TUA8 Cri-du-chat regi	3.98
	436726	AA324975	Hs.128993 *ESTs, Weakly similar to KIAA0465 protei	3.95
	459367	BE148877	"gb:CM4-HT0244-111189-040-h12 HT0244 Hom	3.95
	427318	AF186081	Hs.175783 zinc transporter	3.92
50	411762	AW860972	"gb:QVO-CT0387-180300-167-h07 CT0387 Hom	3.85
	418668	AW407987	Hs.87150 Human clone A9A2BR11 (CAC)n/(GTG)n repea	3.75
	458311	AF069478	"gb:AF069478 Homo sapiens astrocytoma II	3.61
	403649			3.60
	419682	H13139	Hs.82282 paired-like homeodomain transcription fa	3.58
55	412519	AA196241	Hs.73980 "troponin T1, skeletal, slow"	3.51
	414206	AW276887	Hs.46609 ESTs	3.45
	427419	NM_000200	Hs.177888 histatin 3	3.37
	420777	AA280223	Hs.130865 ESTs	3.35
	428134	AA421773	Hs.161008 ESTs	3.31
60	450218	R02018	Hs.168640 *Ank, mouse, homolog of	3.30
	433474	AI192185	Hs.147174 *EST, Highly similar to ubiquitin-protei	3.30
	418833	AW974899	Hs.282778 ESTs	3.28
	400440	X83957	Hs.83870 nebulin	3.18



	413778	AA090235	Hs.75535	*myosin, light polypeptide 2, regulatory	3.06
	423151	AW838068		*gb:QV3-LT0048-010300-109-102 LT0048 Hom	3.05
	445060	AA830811	Hs.88808	ESTs	2.98
	457065	AI476318	Hs.192480	ESTs	2.95
5	432458	H00093		*gb:ph8f12u_19/1TV Outward Alu-primed hn	2.92
	405678				2.85
	406707	S73840	Hs.931	*myosin, heavy polypeptide 2, skeletal m	2.81
	444105	AW189097	Hs.166597	ESTs	2.78
	433968	AL157518	Hs.90421	PRO2463 protein	2.73
10	438522	AA809431	Hs.258886	ESTs	2.73
	436562	H71937	Hs.169756	*complement component 1, s subcomponent	2.68
	412417	AA102268	Hs.42175	ESTs	2.67
	455590	BE072259		*gb:QV4-BT0536-271299-059-g04 BT0536 Hom	2.65
	415380	F07953	Hs.16085	putative G-protein coupled receptor	2.65
15	428729	AL162331	Hs.191436	hypothetical protein FLJ10619	2.64
	408537	AW207734		*gb:U1-H-B12-age-h-01-0-ULs1 NCI_CGAP_S	2.63
	424706	AA741336	Hs.152108	transcriptional unit N143	2.63
	413212	BE072092		*gb:PM4-BT0532-160200-003-b11 BT0532 Hom	2.63
	406704	M21665	Hs.929	*myosin, heavy polypeptide 7, cardiac mu	2.62
20	437507	AA758538	Hs.246882	ESTs	2.60
	410384	AI933794	Hs.42745	ESTs	2.58
	408074	R20723	Hs.124764	ESTs	2.58
	436653	AA828828	Hs.282402	ESTs	2.52
25	458090	AI282149	Hs.56213	*ESTs, Highly similar to FXD3_HUMAN FORK	2.51
	432003	AI689154	Hs.122972	ESTs	2.50
	436915	AA737400	Hs.142230	ESTs	2.50
	410028	AW576454	Hs.258553	ESTs	2.46
	448920	AW408009	Hs.22580	alkylglycerone phosphate synthase	2.45
	422046	AI638562		*gb:ts50a10.x1 NCI_CGAP_Ut1 Homo sapiens	2.44
30	451122	AA015767	Hs.193587	ESTs	2.40
	422646	H87863	Hs.151380	ESTs	2.36
	451237	AW600293		*gb:EST00049 pGEM-T library Homo sapiens	2.36
	400001			AFFX control: BioB-3	2.36
	415835	Z45365		*gb:HSC2NF061 normalized infant brain cD	2.36
35	439708	AW872527	Hs.59761	ESTs	2.36
	423341	AW242394	Hs.252495	ESTs	2.36
	436486	AA742221	Hs.120633	ESTs	2.35
	407449	AJ002784		gb:Homo sapiens mRNA; fetal brain cDNA 5	2.33
	430573	AA744550	Hs.136345	ESTs	2.32
40	401874				2.31
	443356	AL044498	Hs.133262	*ESTs, Weakly similar to PH0217 reverse	2.31
	430751	NM_012471	Hs.247868	transient receptor potential channel 5	2.25
	439128	AI949371	Hs.153089	ESTs	2.25
	448765	R15337	Hs.21958	*Homo sapiens cDNA FLJ10532 fis, clone N	2.25
45	451130	AI762250	Hs.211347	ESTs	2.24
	405420				2.23
	455029	AW851258		*gb:IL3-CT0220-160200-066-H06 CT0220 Hom	2.23
	438224	AA933999		*gb:on91f04.s1 Soares_NFL_T_GBC_S1 Homo	2.23
	407764	BE008347		*gb:CMO-BN0154-080400-325-h04 BN0154 Hom	2.23
50	413549	BE252470		*gb:601108292F1 NIH_MGC_16 Homo sapiens	2.23
	437010	AA741368	Hs.281434	ESTs	2.23
	435111	AI914279	Hs.213740	ESTs	2.22
	403375				2.21
	455060	AW853441		*gb:RC1-CT0252-030100-023-g09 CT0252 Hom	2.21
55	409792	AW854153		*gb:RC3-CT0254-060400-029-d03 CT0254 Hom	2.20
	421154	AA284333	Hs.287631	*Homo sapiens cDNA FLJ14269 fis, clone P	2.19
	401963				2.18
	435034	AF168711	Hs.159397	x 010 protein	2.18
	448996	AW998989	Hs.105749	KIAA0553 protein	2.18
60	436816	AW297599	Hs.255667	ESTs	2.17
	442252	AI733395	Hs.129124	ESTs	2.17
	419310	AA238233	Hs.188716	ESTs	2.16
	418579	H91800	Hs.124156	ESTs	2.16
	423315	R54109	Hs.26096	ESTs	2.16
65	432744	AA988835	Hs.38684	ESTs	2.15
	424492	AI133482	Hs.165210	ESTs	2.15
	424770	AA425562		*gb:zw46e05.r1 Soares_total_fetus_Nb2HF8	2.15
	437101	AA744518	Hs.120610	ESTs	2.15
	428793	AC004957	Hs.288875	*ESTs, Highly similar to collapsin-2-lik	2.15

	415708	H56475		*gb:y187d11.r1 Soares_pineaal_gland_N3HPG	2.13
	459619				2.12
	427506	AK000134	Hs.179100	hypothetical protein FLJ20127	2.12
	452508	AA804174	Hs.184354	ESTs	2.10
5	410881	AW809157		*gb:RC0-ST0118-041099-031-c07_1 ST0118 Homo sapiens cDNA, mRNA sequence*	2.10
	403087				2.10
	403869				2.10
	445028	D81194	Hs.282499	ESTs	2.10
	447884	H29505		*gb:ym60d10.r1 Soares infant brain 1N1B Homo sapiens cDNA clone 5', mRNA sequence*	2.10
10	414575	H11257	Hs.295233	ESTs	2.09
	420351	BE218221	Hs.190044	ESTs	2.08
	426998	BE274360		*gb:601121068F1 NIH_MGC_20 Homo sapiens cDNA clone 5', mRNA sequence*	2.08
	405455				2.08
15	423843	AA332652		*gb:EST36627 Embryo, 8 week I Homo sapiens cDNA 5' end similar to similar to monamine oxidase B, mRNA sequence*	2.08
	406135				2.07
	427046	BE246180	Hs.121385	ESTs	2.07
	403493				2.05
20	444514	A1682905	Hs.270431	*ESTs, Weakly similar to ALU1_HUMAN ALU SUBFAMILY J SEQUENCE CONTAMINATION WARNING ENTRY [H.sapiens]*	2.05
	435884	AA701443	Hs.192868	ESTs	2.05
	419629	AB020695	Hs.91662	KIAA0888 protein	2.03
	405900				2.03
	457350	AW974438	Hs.194136	*ESTs, Moderately similar to AF091457 1 zinc finger protein RIN ZF [R.norvegicus]*	2.02
25	400007			AFFX control: BioDn-5	2.01
	406978	M64358		*gb:Human rhom-3 gene, exon.*	2.00

**TABLE 8A** shows the accession numbers for those primekeys lacking a unigeneID in Table 8. For each probeset we have listed the gene cluster number from which the oligonucleotides were designed. Gene clusters were compiled using sequences derived from Genbank ESTs and mRNAs. These sequences were clustered based on sequence similarity using Clustering and Alignment Tools (DoubleTwist, Oakland California). The Genbank accession numbers for sequences comprising each cluster are listed in the "Accession" column.

10	Pkey: CAT number: Accession:	Unique Eos probeset Identifier number Gene cluster number Genbank accession numbers	
15	Pkey	CAT number	Accessions
	407764	1014849_1	BE008347 BE008320 BE083307 BE083311 AW075968
	408537	1064753_1	AW207734 D60164 D81150 D81078 D61356 AW996804
	409792	1154677_1	AW854153 AW500210 BE145772 AW501310
20	410881	1225682_1	AW809157 AW812181 AW812175 AW812172 AW812161 AW812165
	411762	1256908_1	AW860972 AW862598 AW862599 AW860988 AW860983 AW860898 AW860925 AW860922 AW860986 AW860984 AW860989
	413212	1353792_1	BE072092 BE072106 BE072088 BE072098 BE072103
	413549	1375933_2	BE252470 BE147573
	415708	1548209_1	H56475 F29401 F34552
25	415835	1558511_1	Z45365 R25905 H05203 T77496
	422046	210744_1	AI638562 T16829 H13401 F07773 R55836
	423151	225415_1	AW838068 AW837986 AW838067 AA322487 AW837836
	423843	232510_1	AA332652 AA331633 AW899369 AW802993 BE170475 AA378845 AW984175 AI475221
	424770	243504_1	AA425562 AI880208 AA346646 N22655 AW811775 AW811786
30	426998	274259_-1	BE274360
	432456	347718_2	H00093 H00079 H00070 H00054 H00049 H00063 AW905306 AW905241 AW905410 AW905307 AW905411 AW905240
	AW905210		AW905352 AW905304 AW905239 AW905242 AW905243 H00087
	438224	452656_1	AA933999 AA781181
35	447884	740749_1	H29505 R18575 Z43580 T48738 AI435454 BE004683
	451237	863269_1	AW600293 AI767468
	455029	1249374_1	AW851258 AW851435 AW851106 AW851421
	455060	1251259_1	AW853441 BE145228 BE145218 BE145162 BE145283
	455590	1335127_1	BE072259 BE072230 BE007911
40	458311	543550_1	AF069478 AF069479 AF069480

**TABLE 8B** shows the genomic positioning for those primekeys lacking unigene ID's and accession numbers in table 8. For each predicted exon, we have listed the genomic sequence source used for prediction. Nucleotide locations of each predicted exon are also listed.

5				
10	Pkey:	Unique number corresponding to an Eos probeset		
	Ref:	Sequence source. The 7 digit numbers in this column are Genbank Identifier (GI) numbers. "Dunham I. et al." refers to the publication entitled "The DNA sequence of human chromosome 22." Dunham I. et al., Nature (1999) 402:489-495.		
	Strand:	Indicates DNA strand from which exons were predicted.		
	Nt_position:	Indicates nucleotide positions of predicted exons.		
15	Pkey	Ref	Strand	Nt_position
	401963	3126783	Plus	51382-51521
	401974	3126777	Plus	85330-85683
	403087	8954241	Plus	169511-169795
20	403375	9255944	Minus	92554-92795
	403493	7341425	Plus	157568-159084
	403612	8469060	Minus	94723-94859
	403649	8705159	Minus	27141-27247
	403869	7280046	Minus	34379-34583
25	404113	9588571	Minus	13448-13846
	404567	7249169	Minus	101320-101501
	405163	9966287	Minus	161171-161299
	405227	6731245	Minus	22550-22802
	405420	7211837	Minus	13428-13582
30	405455	7656675	Plus	134112-134671
	405678	4079670	Plus	151821-152027
	405900	6758795	Minus	71181-71535
	406135	9164918	Minus	65489-65715

**TABLE 9: 1001 GENES SIGNIFICANTLY UP-REGULATED IN NORMAL PROSTATE COMPARED TO PROSTATE CANCER**

Table 9 shows 1001 genes significantly up-regulated in prostate cancer compared to normal prostate. These were selected from 59680 probesets on the Affymetrix/Eos Hu03 GeneChip array such that the ratio of "average" normal prostate to "average" prostate cancer tissues was greater than or equal to 8.14. The "average" normal prostate level was set to the mean amongst 4 normal prostate tissues. The "average" prostate cancer level was set to the 85<sup>th</sup> percentile amongst 73 tumor samples. In order to remove gene-specific background levels of non-specific hybridization, the 10<sup>th</sup> percentile value amongst all the tissues was subtracted from both the numerator and the denominator before the ratio was evaluated.

15	Pkey:	Unique Eos probeset identifier number		
	ExAccn:	Exemplar Accession number, Genbank accession number		
	UnigeneID:	Unigene number		
	Unigene Title:	Unigene gene title		
	R1:	Ratio of prostate cancer to normal prostate		
20	Pkey	ExAccn	UnigeneID Unigene Title	R1
	451002	AA013299	Hs.8018 ESTs, Weakly similar to ALU3_HUMAN ALU S	1684.00
25	435596	AA689465	Hs.188999 ESTs	738.00
	443576	AI078027	Hs.169338 ESTs	246.86
30	434247	AA928116	Hs.272065 ESTs	245.20
	400452	AK000185	gb:Homo sapiens cDNA FLJ20178 fis, clone	222.00
35	405932			221.33
	427906	AA864330	Hs.166520 ESTs	212.00
40	443685	AI686550	Hs.174481 ESTs	163.20
	451554	AI474868	Hs.193237 ESTs	149.45
45	418323	NM_002118	Hs.1162 major histocompatibility complex, class	126.11
	429480	M36860	Hs.9295 elastin (supravalvular aortic stenosis,	123.27
50	426025	AW138330	Hs.233778 ESTs	120.00
	418917	X02994	Hs.1217 adenosine deaminase	106.75
55	404407			105.71
	442027	AI652926	Hs.128395 ESTs	100.53
60	433704	AA608684	Hs.121705 ESTs, Moderately similar to ALUC_HUMAN I	94.00
	453758	U83527	gb:HSU83527 Human fetal brain (M.Lovett)	89.18
65	415354	F06495	gb:HSC1AB051 normalized infant brain cDN	87.73
	424239	M67439	Hs.143526 dopamine receptor D5	86.82
70	444143	AW747996	Hs.160999 ESTs	86.43
	401672			77.26
75	430590	AW363947	Hs.248381 CD68 antigen	68.47
	411972	BE074959	gb:PMO-BT0582-310100-001-f08 BT0582 Homo	68.00
80	448992	AI766053	Hs.188346 ESTs	61.26
	408828	BE540279	gb:801059857F1 NIH_MGC_10 Homo sapiens c	57.71
85	409653	AW451693	Hs.220826 ESTs	56.40
	402964			54.67
90	422673	N59027	gb:yv59d11.r1 Soares fetal liver spleen	54.00
	422568	AA372275	Hs.279800 Homo sapiens cDNA FLJ11383 fis, clone HE	54.00
95	438907	R32704	Hs.301298 ESTs	52.96
	405172			52.96
100	444897	AW137088	Hs.144857 ESTs	52.32
	458019	AW592931	Hs.256298 ESTs	51.63
105	405275	AB028989	Hs.88500 mitogen-activated protein kinase 8 inter	50.98
	457815	AA703679	Hs.106999 ESTs, Weakly similar to SYT5_HUMAN SYNAP	49.60
110	424385	AA339668	gb:EST44776 Fetal brain I Homo sapiens c	48.90
	407172	T54095	gb:ya92c05.s1 Stratagene placenta (83722	47.98
115	428202	AA424163	Hs.156895 ESTs	46.83
	435672	AI700148	Hs.283626 ESTs	43.57
120	420283	AA485224	Hs.57734 G protein-coupled receptor kinase-Intera	43.00
	417016	AA837098	Hs.269933 ESTs	42.70
125	438854	AF074994	Hs.24240 ESTs	42.67

	406134			42.43	
	457319	AA480895	Hs.201552	ESTs, Weakly similar to T17288 hypotheti	42.31
	409314	AA070266		gb:zm69d04.r1 Stratagene neuroepithelium	42.25
	401124				41.61
5	429316	AI371157	Hs.178538	ESTs	40.00
	420317	AB006628	Hs.98485	KIAA0290 protein	39.64
	457586	AW062439		gb:MR0-CT0060-120899-001-f08 CT0060 Homo	39.60
	417407	AA923278	Hs.280905	ESTs, Weakly similar to protease [H.sapi]	38.73
	430269	BE221682	Hs.178364	ESTs	38.06
10	439602	W79114	Hs.58558	ESTs	36.69
	433686	AA604799	Hs.136528	ESTs, Moderately similar to ALU1_HUMAN A	36.29
	417993	AW963705	Hs.285806	ESTs, Weakly similar to ALU7_HUMAN ALU S	36.18
	428214	AA936282	Hs.120397	ESTs	36.10
	416908	AA333990	Hs.80424	coagulation factor XIII, A1 polypeptide	36.08
15	426264	BE314852	Hs.168694	hypothetical protein FLJ10257	36.00
	415911	H08796	Hs.124952	ESTs	36.00
	457502	AA076049	Hs.274415	Homo sapiens cDNA FLJ10229 fis, clone HE	35.23
	421566	NM_000399	Hs.1395	early growth response 2 (Krox-20 (Drosop	35.20
	401468				34.89
20	458561	AI220150	Hs.211195	ESTs	34.60
	433601	BE350738	Hs.123993	ESTs, Weakly similar to T00366 hypotheti	33.24
	454977	AW848032		gb:JL3-CT0214-231299-053-D11 CT0214 Homo	32.96
	402828				32.93
	414522	AW518944	Hs.76325	Homo sapiens cDNA: FLJ23125 fis, clone L	31.76
25	402842				31.68
	421245	AA285363		gb:JH280 HTCDL1 Homo sapiens cDNA 5'/3'	31.59
	401631	F05183	Hs.1799	CD1D antigen, d polypeptide	31.26
	408057	AW139565		gb:U1-H-B11-aea-d-04-0-U1.s1 NCI_CGAP_Su	31.24
	408069	H81795		gb:y58a10.r1 Soares retina N2b4HR Homo	31.20
30	438694	T87479	Hs.291797	ESTs	31.09
	449156	AF103907	Hs.171353	prostate cancer antigen 3	29.78
	428796	AU076734	Hs.193665	solute carrier family 28 (sodium-coupled	29.76
	452549	AI907039		gb:PM-BT134-020499-566 BT134 Homo sapien	29.59
	410129	BE244074	Hs.285531	regulator of Fas-induced apoptosis	29.53
35	414464	AI870175	Hs.13957	ESTs	29.47
	412326	R07566	Hs.73817	Small inducible cytokine A3 (homologous	29.22
	459081	W07808		gb:zb03a12.r1 Soares_fetal_lung_NbHL19W	29.20
	448702	AW102670	Hs.122464	ESTs	29.13
	451939	U80456	Hs.27311	single-minded (Drosophila) homolog 2	28.74
40	443412	W84893	Hs.9305	angiotensin receptor-like 1	28.61
	457324	AB028990	Hs.243901	KIAA1067 protein	28.24
	424247	X14008	Hs.234734	lysozyme (renal amyloidosis)	28.18
	457140	AI279960	Hs.178140	ESTs	28.12
	444151	AW972917	Hs.128749	alpha-methylacyl-CoA racemase	28.06
45	457669	AW104257	Hs.123426	ESTs, Weakly similar to putative serine/	27.61
	412429	AV650262	Hs.75765	GRO2 oncogene	27.36
	405495				27.33
	406516				27.25
	407997	AW135429	Hs.243577	ESTs	26.96
50	442115	AW452332	Hs.257554	ESTs	26.36
	409038	T97490	Hs.50002	small inducible cytokine subfamily A (Cy	26.34
	402838				26.32
	449846	AI979284	Hs.200552	ESTs	26.21
	417153	X57010	Hs.81343	collagen, type II, alpha 1 (primary oste	26.20
55	439782	NM_014856	Hs.6684	KIAA0476 gene product	25.91
	450096	AI682088	Hs.223368	ESTs	25.60
	424196	AL133660	Hs.142926	Homo sapiens mRNA; cDNA DKFZp434M0927 (f	25.57
	414246	BE391090	Hs.280278	EST	25.57
	420848	NM_005188	Hs.99980	Cas-Br-M (murine) ecotropic retroviral t	25.48
60	424778	AA251048	Hs.153042	lymphocyte antigen 9	25.42
	409126	AA063426		gb:zf70c08.s1 Soares_pineal_gland_N3HPG	25.25
	443936	AW083491	Hs.31196	ESTs	25.22
	419392	W28573		gb:51f10 Human retina cDNA randomly prim	25.01
	411201	T74588	Hs.8509	ESTs, Weakly similar to CO3_HUMAN COMPLE	24.85
65	422940	BE077458		gb:RC1-BT0606-090500-015-b04 BT0606 Homo	24.76
	437571	AA760894	Hs.153023	ESTs	24.74
	433973	AI014723	Hs.131770	ESTs	24.57
	422416	BE019557	Hs.11900	Human DNA sequence from clone RP4-583P15	24.53
	421552	AF026692	Hs.105700	secreted frizzled-related protein 4	24.49

	443668	U25758	Hs.134584	ESTs	24.49
	424800	AL035588	Hs.153203	MyoD family inhibitor	24.10
	453633	AA357001	Hs.34045	hypothetical protein FLJ20764	24.04
	430565	AL122081	Hs.244343	cadherin related 23	24.00
5	433694	AI208611	Hs.12066	Homo sapiens cDNA FLJ11720 fis, clone HE	23.89
	451045	AA215672		gb:zr96e09.s1 NCLCGAP_GCB1 Homo sapiens	23.83
	408583	AW449674	Hs.47359	ESTs	23.73
	444040	AF204231	Hs.182982	golgin-67	23.62
	414182	AA136301		gb:zk93g04.s1 Soares_pregnant_uterus_NbH	23.39
10	418678	NM_001327	Hs.167379	cancer/testis antigen	23.20
	408380	AF123050	Hs.44532	diubiquitin	22.68
	456076	BE243877	Hs.76941	ATPase, Na+K+ transporting, beta 3 poly	22.65
	418299	AA279530	Hs.83968	integrin, beta 2 (antigen CD18 (p95), ly	22.38
	444917	R68651	Hs.144997	ESTs	22.26
15	444381	BE387335	Hs.283713	ESTs	22.08
	415788	AW628686	Hs.78851	KIAA0217 protein	22.04
	410896	AW809637		gb:MR4-ST0124-261099-015-b07 ST0124 Homo	22.00
	412978	AI431708	Hs.820	homeo box C6	21.95
	458418	AV653846	Hs.126261	Homo sapiens Chromosome 16 BAC clone CIT	21.94
20	454791	BE071874		gb:RC2-BT0522-120200-014-a06 BT0522 Homo	21.84
	408748	J05500	Hs.47431	spectrin, beta, erythrocytic (includes s	21.26
	416011	H14487		gb:ym18c10.r1 Soares infant brain 1N1B H	21.24
	440474	AI207936	Hs.7195	gamma-aminobutyric acid (GABA) A recepto	21.14
	447047	AI623698	Hs.246306	Homo sapiens cDNA: FLJ23529 fis, clone L	21.11
25	426793	X89887	Hs.172350	H1R (histone cell cycle regulation defec	21.10
	409841	AW502139		gb:UH-HF-BR0p-ajr-e-05-0-ULr1 NIH_MGC_5	21.07
	405685				20.90
	457359	AI983207	Hs.192481	ESTs, Weakly similar to SYPH_HUMAN SYNAP	20.84
	423067	AA321355	Hs.285401	ESTs	20.74
30	422355	AW403724	Hs.140	immunoglobulin heavy constant gamma 3 (G	20.73
	401201				20.73
	458278	W28912	Hs.129019	ESTs	20.68
	439097	H66948		gb:yr86d10.r1 Soares fetal liver spleen	20.67
35	414875	H42679	Hs.77522	major histocompatibility complex, class	20.66
	400928				20.66
	451355	NM_004197	Hs.444	serine/threonine kinase 19	20.64
	446982	AW500221	Hs.43616	Homo sapiens mRNA for FLJ00029 protein,	20.61
	417105	X60892	Hs.81226	CD6 antigen	20.61
	405777				20.51
40	424123	AW966158	Hs.58582	Homo sapiens cDNA FLJ12702 fis, clone NT	20.20
	425009	X58288	Hs.154151	protein tyrosine phosphatase, receptor t	20.10
	443271	BE568568	Hs.195704	ESTs	19.98
	421064	AI245432	Hs.101382	tumor necrosis factor, alpha-induced pro	19.98
	418819	AA228776	Hs.191721	ESTs	19.94
45	457595	AA584854		gb:nc09h11.s1 NCLCGAP_Phe1 Homo sapiens	19.90
	404426				19.84
	412571	U43143	Hs.74049	fms-related tyrosine kinase 4	19.79
	431457	NM_012211	Hs.256297	integrin, alpha 11	19.62
	414002	NM_006732	Hs.75678	FBJ murine osteosarcoma viral oncogene h	19.57
50	418994	AA296520	Hs.89546	Selectin E (endothelial adhesion molecu	19.56
	437158	AW090198	Hs.4779	KIAA1150 protein	19.52
	437866	AA156781	Hs.83992	ESTs	19.44
	417421	AL138201	Hs.82120	nuclear receptor subfamily 4, group A, m	19.34
	433057	X15675	Hs.296832	Human PTR7 mRNA for repetitive sequence	19.22
55	421730	AW449808	Hs.164036	glucosamine (N-acetyl)-6-sulfatase (Sanf	19.21
	456557	AA284477	Hs.96618	ESTs	18.77
	440806	AI247422	Hs.129966	ESTs	18.76
	439845	AL355743	Hs.56663	Homo sapiens EST from clone 41214, full	18.65
	416155	AI807264	Hs.205442	ESTs, Weakly similar to AF117610 1 inner	18.64
60	437820	AA769062	Hs.16029	ESTs, Weakly similar to alternatively sp	18.62
	450923	AW043951	Hs.38449	ESTs	18.59
	418329	AW247430	Hs.84152	cystathionine-beta-synthase	18.58
	424537	AI673027	Hs.143271	ESTs	18.55
	447742	AF113925	Hs.19405	caspase recruitment domain 4	18.52
65	415251	R42863	Hs.7124	ESTs	18.47
	440770	AA912815	Hs.222078	ESTs	18.40
	407711	AI085846	Hs.25522	ESTs	18.32
	427157	U51166	Hs.173824	thymine-DNA glycosylase	18.28
	409847	AW501751	Hs.279733	ESTs	18.15

	417240	N57568	Hs.176028	EST	18.13
	435732	AF229178	Hs.123136	leucine rich repeat and death domain con	18.12
	436896	AW977385	Hs.278615	ESTs	18.12
	432485	N90866	Hs.276770	CDW52 antigen (CAMPATH-1 antigen)	17.90
5	429490	AI971131	Hs.293684	ESTs, Weakly similar to alternatively sp	17.82
	429984	AL050102	Hs.227209	DKFZP586F1019 protein	17.82
	448214	AI889114	Hs.195663	ESTs	17.75
	433867	AK000596	Hs.3618	hippocalcin-like 1	17.72
	431735	AW977724	Hs.75968	thymosin, beta 4, X chromosome	17.71
10	401515				17.67
	444045	AI097439	Hs.135548	ESTs	17.58
	442754	AL045825	Hs.210197	ESTs	17.55
	426559	AB001914	Hs.170414	paired basic amino acid cleaving system	17.54
	432415	T16971	Hs.289014	ESTs	17.50
15	427829	AI188225	Hs.127482	ESTs	17.60
	432516	R08003	Hs.188013	ESTs	17.44
	435259	AA152106	Hs.4859	cydin L ania-6a	17.38
	414989	T81668		gb:yd29c04.r1 Soares fetal liver spleen	17.31
	444880	AW118683	Hs.154150	ESTs	17.30
20	417651	R06874	Hs.268628	ESTs	17.27
	453457	AL037103	Hs.270599	ESTs, Weakly similar to unnamed protein	17.22
	424246	AW452533	Hs.143604	Kaiso	17.22
	418078	M93119	Hs.89584	insulinoma-associated 1	17.18
	417696	BE241624	Hs.82401	CD69 antigen (p60, early T-cell activati	17.14
25	431117	AF003522	Hs.250500	delta (Drosophila)-like 1	17.14
	455254	AW877015		gb:QV2-PT0010-250300-096-f12 PT0010 Homo	17.14
	425782	U66468	Hs.159525	cell growth regulatory with EF-hand doma	17.12
	426678	H08170	Hs.113755	ESTs	17.12
	428403	NM_000361	Hs.2030	thrombomodulin	17.01
30	425905	AB032959	Hs.161700	KIAA1133 protein	17.00
	438867	AW451157	Hs.181157	ESTs	16.98
	420940	AA830664	Hs.143974	ESTs	16.94
	459234	AI940425		gb:CM0-CT0052-150789-024-c04 CT0052 Homo	16.92
	404756				16.91
35	422247	U18244	Hs.113802	solute carrier family 1 (high affinity a	16.90
	420568	F09247	Hs.167399	protocadherin alpha 5	16.88
	443559	AI076765	Hs.269899	ESTs	16.80
	438703	AI803373	Hs.31599	ESTs	16.78
	411424	AW845985		gb:RC2-CT0163-200999-002-H08 CT0163 Homo	16.70
40	402895				16.69
	422538	NM_006441	Hs.118131	5,10-methylenetetrahydrofolate synthetase	16.68
	447108	AW449802	Hs.217853	ESTs, Moderately similar to NK-TUMOR REC	16.65
	448520	AB002367	Hs.21355	doublecortin and CaM kinase-like 1	16.54
	438567	AW451955	Hs.153065	ESTs	16.52
45	407811	AW180902	Hs.40098	cysteine knot superfamily 1, BMP antagonist	16.50
	410721	R23534	Hs.2730	heterogeneous nuclear ribonucleoprotein	16.50
	437133	AB018319	Hs.5460	KIAA0776 protein	16.40
	408182	AA047854		gb:zf49g04.r1 Soares retina N2b4HR Homo	16.32
	417315	AI080042	Hs.180450	ribosomal protein S24	16.30
50	431840	AA534908	Hs.2860	POU domain, class 5, transcription facto	16.28
	438882	AA847856	Hs.124565	ESTs	16.20
	418277	AW135221	Hs.130812	ESTs	16.09
	410688	AW786342		gb:PM2-UM0027-230200-002-h02 UM0027 Homo	16.04
	420120	AL049610	Hs.95243	transcription elongation factor A (SII)-	16.04
55	428597	NM_003816	Hs.2442	a disintegrin and metalloproteinase doma	16.02
	447033	AI357412	Hs.157601	EST - not in UniGene	16.02
	421684	BE281591	Hs.106768	hypothetical protein FLJ10511	15.94
	408599	AA055800	Hs.222933	ESTs	15.93
	446012	AV656098	Hs.172382	hypothetical protein FLJ20001	15.86
60	408671	AA076769		gb:7BQ2B10 Chromosome 7 Fetal Brain cDNA	15.85
	405934				15.84
	426108	AA622037	Hs.166468	programmed cell death 5	15.84
	416208	AW291168	Hs.41285	ESTs	15.48
	410708	AA534370	Hs.154088	Homo sapiens cDNA: FLJ22756 fis, clone K	15.42
65	447342	AI199268	Hs.19322	ESTs; Weakly similar to !!! ALU SUBFAM1	15.38
	454563	AW807530		gb:CM0-ST0081-130889-054-d02 ST0081 Homo	15.37
	411507	AW850140		gb:IL3-CT0219-261099-023-D11 CT0219 Homo	15.36
	438170	AI916685	Hs.194801	ESTs	15.29
	416292	AA178233	Hs.42390	nasopharyngeal carcinoma susceptibility	15.26



	406638	M13861	gb:Human T-cell receptor active beta-cha	15.26
	446686	AW138043	Hs.156307 ESTs	15.25
	434485	AI623511	Hs.118567 ESTs	15.24
	441188	AW292830	Hs.255609 ESTs	15.22
5	444172	BE147740	Hs.104558 ESTs	15.22
	409521	BE244854	Hs.159578 Homo sapiens mRNA for FLJ00020 protein,	15.16
	420748	AA278956	Hs.88672 ESTs	15.14
	422583	AA410506	Hs.118578 H.sapiens mRNA for ribosomal protein L18	15.14
	424240	AB023185	Hs.143535 calcium/calmodulin-dependent protein kin	15.12
10	451118	AI862086	Hs.60640 ESTs	15.12
	437495	BE177778	gb:RC1-HT0598-310300-012-f07 HT0598 Homo	15.12
	445467	AI239832	Hs.15617 ESTs, Weakly similar to ALU4_HUMAN ALU S	15.06
	418305	AW006783	Hs.6686 ESTs	15.03
	402812			15.02
15	436851	AA732480	Hs.293581 ESTs	15.00
	400991			15.00
	415752	BE314524	Hs.78776 Human putative transmembrane protein (nm	14.96
	429900	AA460421	Hs.30875 ESTs	14.90
	403883			14.84
20	430315	NM_004293	Hs.239147 guanine deaminase	14.80
	451852	AL120173	Hs.301663 ESTs	14.72
	424687	J05070	Hs.151738 matrix metalloproteinase 9 (gelatinase B	14.69
	447229	BE617135	gb:501441677F1 NIH_MGC_65 Homo sapiens c	14.67
	425818	AB021225	Hs.159581 matrix metalloproteinase 17 (membrane-in	14.65
25	448553	AI638449	Hs.173031 ESTs	14.63
	431089	BE041395	Hs.283676 ESTs, Weakly similar to unknown protein	14.60
	459145	AI903354	gb:RC-BT029-100199-117 BT029 Homo sapien	14.55
	449650	AF055575	Hs.297647 ESTs, Moderately similar to calcium chan	14.54
	400952			14.46
30	445885	AI734009	Hs.127699 EST cluster (not in UniGene)	14.44
	407938	AA905097	Hs.85050 phospholamban	14.42
	431676	AI685464	Hs.282638 ESTs	14.40
	437210	AA311443	Hs.293563 Homo sapiens mRNA; cDNA DKFZp586E2317 (f	14.36
	451900	AB023189	Hs.27207 KIAA0982 protein	14.36
35	445800	AA128419	Hs.301632 ESTs	14.32
	412368	AW945992	Hs.181125 immunoglobulin lambda locus	14.31
	409055	AW304028	Hs.300578 ESTs	14.23
	408763	W57550	Hs.301526 Homo sapiens cDNA FLJ13181 fis, clone NT	14.22
	446734	AL049278	Hs.16074 Homo sapiens mRNA; cDNA DKFZp564I153 (fr	14.22
40	413551	BE242639	Hs.75425 ubiquitin associated protein	14.22
	421913	AI934365	Hs.109439 osteoglycin (osteoinductive factor, mime	14.22
	452712	AW838616	gb:RC5-LT0054-140200-013-D01 LT0054 Homo	14.22
	451468	AW503398	Hs.210047 ESTs	14.16
	406038	Y14443	Hs.88219 zinc finger protein 200	14.14
45	424909	S78187	Hs.153752 cell division cycle 25B	14.07
	434078	AW880709	Hs.283683 EST	14.07
	415254	AI815831	Hs.184378 ESTs	14.05
	418196	AI745649	Hs.26549 ESTs, Weakly similar to T00066 hypotheti	14.02
	410020	T86315	Hs.728 ribonuclease, RNase A family, 2 (liver,	13.98
50	411352	NM_002890	Hs.758 RAS p21 protein activator (GTPase activa	13.98
	429848	AF145439	Hs.225946 chemokine (C-C motif) receptor 9	13.95
	413729	BE159999	gb:QV1-HT0412-270300-123-d10 HT0412 Homo	13.90
	400125			13.88
	420319	AW406289	Hs.96593 hypothetical protein	13.85
55	448272	AI479094	Hs.170786 ESTs	13.80
	422695	AA315158	gb:EST186956 HCC cell line (metastasis t	13.80
	424565	AW102723	Hs.75295 guanylate cyclase 1, soluble, alpha 3	13.78
	458048	H30340	Hs.173705 Homo sapiens cDNA: FLJ22050 fis, clone H	13.78
	408894	AI935400	Hs.217286 ESTs	13.76
60	454093	AW860158	gb:RC0-CT0379-290100-032-b04 CT0379 Homo	13.75
	410889	X91662	Hs.66744 twist (Drosophila) homolog (acrocephalos	13.74
	457751	AI908236	gb:IL-BT166-180399-010 BT166 Homo sapien	13.72
	455131	AW857913	gb:RC0-CT0323-231199-031-b05 CT0323 Homo	13.69
	408364	AW015238	Hs.128453 ESTs	13.67
65	425907	AA385752	Hs.155965 ESTs	13.62
	402359			13.60
	401044			13.53
	409877	AW502498	Hs.157150 ESTs, Weakly similar to zinc finger prot	13.53
	423690	AA329648	Hs.23804 ESTs	13.49

	430685	AI690234	Hs.191666	ESTs, Weakly similar to reverse transcri	13.47
	414052	AW578849	Hs.283552	ESTs, Weakly similar to unnamed protein	13.46
	447858	AW080339	Hs.211911	ESTs	13.44
	435716	AI573283	Hs.38458	ESTs	13.44
5	439120	H56389	gb:y187c03.r1	Soares_pineal_gland_N3HPG	13.43
	402788				13.40
	451591	AA886446	Hs.146278	ESTs	13.40
	405411				13.38
	426558	AW188574	Hs.24218	ESTs	13.34
10	453506	AA132818	Hs.110407	ESTs, Weakly similar to coded for by C.	13.33
	416445	AL043004	Hs.300678	Human serine/threonine kinase mRNA, part	13.32
	457084	AI074149	Hs.150905	ESTs, Weakly similar to chondroitin 4-su	13.32
	403838				13.32
	427337	Z46223	Hs.176663	Fc fragment of IgG, low affinity IIb, r	13.30
	434318	AW207552	Hs.116328	ESTs, Weakly similar to dJ134E15.1 [H.sa	13.28
	435193	N41359	Hs.218107	ESTs	13.28
	414756	AW451101	Hs.159489	ESTs, Moderately similar to hexokinase I	13.27
	420626	AF043722	Hs.99491	RAS guanyl releasing protein 2 (calcium	13.26
	420052	AA418850	Hs.44410	ESTs	13.25
20	414020	NM_002984	Hs.75703	small inducible cytokine A4 (homologous	13.25
	403851				13.24
	422647	W07492	Hs.157101	ESTs	13.21
	433598	A1762836	Hs.271433	ESTs, Moderately similar to ALU2_HUMAN A	13.21
	409065	AB033113	Hs.50187	KIAA1287 protein	13.20
25	435063	R21966	Hs.57734	G protein-coupled receptor kinase-intera	13.19
	439367	BE386844	Hs.248746	ESTs	13.17
	451957	A1796320	Hs.10299	Homo sapiens cDNA FLJ13545 fis, clone PL	13.16
	420569	AA278362	Hs.289062	Homo sapiens cDNA FLJ12334 fis, clone MA	13.14
	447883	BE262802	Hs.4909	clckkopl (Xenopus laevis) homolog 3	13.07
30	426490	NM_001621	Hs.170087	aryl hydrocarbon receptor	13.06
	414789	AA155859	Hs.79708	ESTs	13.05
	451418	BE387790	Hs.26369	ESTs	13.04
	443494	T99719	Hs.270404	Homo sapiens cDNA: FLJ22389 fis, clone H	13.03
	425878	AW964806	Hs.38085	ESTs, Weakly similar to putative glycine	13.02
35	431912	AI660552	Hs.154903	ESTs, Weakly similar to A56154 Abl subst	13.00
	407122	H20276	Hs.31742	ESTs	13.00
	456491	AL137466	Hs.97277	Homo sapiens mRNA; cDNA DKFZp434H1322 (f	12.99
	448172	N75276	Hs.135904	ESTs	12.98
	452144	AA032197	Hs.102558	ESTs	12.96
40	419953	BE267154	Hs.125752	ESTs	12.96
	416182	NM_004354	Hs.79069	cyclin G2	12.94
	451154	AA015879	Hs.33536	ESTs	12.93
	412257	AW903830	gb:CM4-NN1037-250400-155-h04 NN1037 Homo	12.93	
	449784	AW161319	Hs.12915	ESTs	12.92
45	432695	D63480	Hs.278634	KIAA0146 protein	12.92
	454105	NM_001259	Hs.38481	cyclin-dependent kinase 6	12.92
	439093	AA534163	Hs.5476	serine protease inhibitor, Kazal type, 5	12.90
	416098	H41324	Hs.31581	ESTs, Moderately similar to ST1B_HUMAN S	12.88
	424897	D63216	Hs.153684	frizzled-related protein	12.88
50	414604	AU076649	Hs.76558	growth arrest and DNA-damage-inducible 3	12.88
	414664	AA587775	Hs.66295	Homo sapiens HSPC311 mRNA, partial cds	12.84
	452580	BE077084	gb:RC5-BT0603-220200-013-C07 BT0603 Homo	12.84	
	413869	NM_000878	Hs.75596	interleukin 2 receptor, beta	12.80
	452359	BE167229	Hs.29206	Homo sapiens clone 24659 mRNA sequence	12.80
55	435886	BE265839	Hs.12126	hepatocellular carcinoma-associated anti	12.78
	445230	U97018	Hs.12451	echinoderm microtubule-associated protei	12.78
	412226	W26786	gb:15d7 Human retina cDNA randomly prime	12.77	
	446619	AU076643	Hs.313	secreted phosphoprotein 1 (osteopontin,	12.76
	447769	AW873704	Hs.48764	ESTs	12.76
60	414478	AI306389	Hs.76240	adenylate kinase 1	12.76
	425383	D83407	Hs.156007	Down syndrome critical region gene 1-lik	12.68
	450704	H85157	Hs.40696	ESTs	12.66
	405856				12.66
	412935	BE267045	Hs.75064	tubulin-specific chaperone c	12.65
65	402802				12.62
	452588	AA889120	Hs.110637	Homeo box A10	12.62
	419978	NM_001454	Hs.83974	forkhead box J1	12.62
	403137				12.60
	430226	BE245562	Hs.2551	adrenergic, beta-2-, receptor, surface	12.57

	448076	AJ133123	Hs.20196	adenylate cyclase 9	12.56
	450462	F07097	Hs.300828	Homo sapiens mRNA full length insert cDN	12.54
	405236				12.52
5	409292	AA071051		gb:zm58e05.s1 Stratagene fibroblast (937	12.47
	421540	AA767669	Hs.10242	ESTs	12.47
	425840	AW978731	Hs.301824	ESTs	12.44
	443181	AI039201	Hs.54548	ESTs	12.42
	452436	BE077546	Hs.31447	ESTs	12.42
10	455183	AW984111		gb:RCO-HN0007-160300-011-f09 HN0007 Homo	12.40
	432887	AI926047	Hs.162859	ESTs	12.37
	410494	M36564	Hs.64016	protein S (alpha)	12.36
	439024	R96696	Hs.35598	ESTs	12.36
	451246	AW189232	Hs.39140	cutaneous T-cell lymphoma tumor antigen	12.36
	432892	AL042815	Hs.15995	ESTs	12.35
15	418982	AI348838	Hs.13073	ESTs	12.35
	414516	AI307802	Hs.279551	ESTs	12.34
	440134	BE410734		gb:601301818F1 NIH_MGC_21 Homo sapiens c	12.29
	443873	AL048542	Hs.16291	ESTs	12.28
	401286				12.26
20	454020	AW962845	Hs.256527	ESTs	12.24
	420077	AW512260	Hs.87767	ESTs	12.24
	443837	AI984625	Hs.9884	spindle pole body protein	12.24
	407519	X64979		gb:H.sapiens mRNA HTPCRX01 for olfactory	12.23
	435839	AF249744	Hs.25951	Rho guanine nucleotide exchange factor (	12.22
25	448552	AW973853	Hs.20104	hypothetical protein FLJ00052	12.20
	405325				12.20
	451009	AA013140	Hs.115707	ESTs	12.18
	423066	Y18264	Hs.120171	ESTs	12.17
	439558	AI623752	Hs.163603	ESTs	12.16
30	443062	N77999	Hs.8963	Homo sapiens mRNA full length insert cDN	12.15
	445873	AA250970	Hs.251946	Homo sapiens cDNA: FLJ23107 fis, clone L	12.14
	453542	AW836724	Hs.33190	Homo sapiens mRNA expressed only in plac	12.11
	440106	AA864968	Hs.127699	ESTs	12.10
	417805	AF006809	Hs.82294	regulator of G-protein signalling 3	12.10
35	440286	U29589	Hs.7138	cholinergic receptor, muscarinic 3	12.04
	420061	AW024937	Hs.29410	ESTs	12.02
	458727	AI022813	Hs.92679	Homo sapiens clone CDABP0014 mRNA sequen	11.96
	445407	AI222658	Hs.221889	ESTs, Weakly similar to la costa (D.mela	11.95
	418250	U29926	Hs.83918	adenosine monophosphate deaminase (isofo	11.94
40	414129	AI990287	Hs.270798	ESTs	11.93
	409799	D11928	Hs.76845	phosphoserine phosphatase-like	11.92
	438481	AW075485	Hs.286049	phosphoserine aminotransferase	11.92
	443912	R37257	Hs.184780	ESTs	11.92
	424606	AA343936		gb:EST49786 Gall bladder I Homo sapiens	11.90
45	434217	AW014795	Hs.23349	ESTs	11.90
	451533	NM_004657	Hs.26530	serum deprivation response (phosphatidy	11.90
	422423	AF283777	Hs.116481	CD72 antigen	11.89
	409398	AW386461		gb:PM4-PT0019-121289-004-F02 PT0019 Homo	11.89
	423853	AB011537	Hs.133466	sftt (Drosophila) homolog 1	11.82
50	446180	AI074413	Hs.14220	hypothetical protein FLJ20450	11.80
	414341	D80004	Hs.75909	KIAA0182 protein	11.80
	406538				11.79
	433253	AW450502	Hs.24218	ESTs	11.79
	447397	BE247676	Hs.18442	E-1 enzyme	11.78
55	451684	AF216751	Hs.26813	CDA14	11.76
	416882	R23765	Hs.23575	ESTs	11.74
	425770	NM_014363	Hs.159492	spastic ataxia of Charlevoix-Saguenay (s	11.72
	428826	AL048842	Hs.194019	atractin	11.72
	433037	NM_014158	Hs.279938	HSPC067 protein	11.72
60	447476	BE293466	Hs.20880	ESTs	11.72
	452092	BE245374	Hs.27842	hypothetical protein FLJ11210	11.72
	412822	M60721	Hs.74870	H2.0 (Drosophila)-like homeo box 1	11.72
	401680	NM_005578	Hs.180398	LIM domain-containing preferred transloc	11.69
	422576	BE548555	Hs.118554	CGI-83 protein	11.68
65	450203	AF097894	Hs.301528	L-kynurenine/alpha-aminoacidipate aminotra	11.68
	410531	AW752953		gb:QV0-CT0224-261099-035-g02 CT0224 Homo	11.67
	425917	W28517	Hs.117167	Homo sapiens cDNA: FLJ23067 fis, clone L	11.66
	418693	AI750878	Hs.87409	thrombospondin 1	11.64
	400557				11.62

	416188	BE157260	Hs.79070	v-myc avian myelocytomatosis viral oncog	11.60
	419047	AW952771	Hs.80043	ESTs	11.59
	420441	AJ986160	Hs.88448	ESTs	11.59
	400885				11.57
5	409853	AW502327		gb:UH-HF-BR0p-aka-a-07-0-Ul.r1 NIH_MGC_5	11.56
	400802				11.56
	434540	NM_016045	Hs.5184	TH1 drosophila homolog	11.55
	431449	M55994	Hs.256278	tumor necrosis factor receptor superfamI	11.55
	425928	S55736	Hs.238852	ESTs, Weakly similar to hypothetical pro	11.54
10	434701	AA460479	Hs.4096	KIAA0742 protein	11.53
	434228	Z42047	Hs.283978	ESTs; KIAA0738 gene product	11.52
	420729	AW964897	Hs.290825	ESTs	11.52
	428328	AA426080	Hs.98489	ESTs	11.50
	433887	AW204232	Hs.278522	ESTs	11.50
15	414812	X72755	Hs.77387	monokine induced by gamma interferon	11.48
	457718	F18572	Hs.22978	ESTs	11.44
	452260	AA453208	Hs.28726	RAB9, member RAS oncogene family	11.42
	459029	AA131376	Hs.285203	fibroblast growth factor 12	11.42
	456267	AJ127858	Hs.83393	cystatin E/M	11.39
20	433285	AW975944	Hs.237396	ESTs	11.38
	449186	AW291876	Hs.196986	ESTs	11.37
	447861	AJ434593	Hs.164294	ESTs	11.37
	456023	R00028		gb:ye70a06.s1 Soares fetal liver spleen	11.36
	439444	AJ277652	Hs.54578	ESTs	11.31
25	401163				11.31
	430886	L36149	Hs.248116	chemokine (C motif) XC receptor 1	11.28
	450784	AW246803	Hs.47289	ESTs	11.28
	452391	AL044829	Hs.29331	camitine palmitoyltransferase I, muscle	11.27
	449625	NM_014253	Hs.23796	odz (odd Oz/ten-m, Drosophila) homolog 1	11.26
30	456827	AA075687	Hs.147176	epidermal growth factor receptor substra	11.24
	439328	W07411	Hs.118212	ESTs, Moderately similar to ALU3_HUMAN A	11.24
	432093	H28383		gb:yl52c03.r1 Soares breast 3NbHBst Homo	11.24
	407335	AA631047	Hs.158761	Homo sapiens cDNA FLJ13054 fis, clone NT	11.23
	442501	AA315267	Hs.23128	ESTs	11.22
35	429746	AJ237672	Hs.214142	5,10-methylenetetrahydrofolate reductase	11.21
	422858	R35398		gb:yg64g10.r1 Soares infant brain 1NIB H	11.20
	415156	X84908	Hs.78060	phosphorylase kinase, beta	11.20
	446713	AV660122	Hs.282675	ESTs	11.20
	452221	C21322	Hs.11577	ESTs	11.20
40	418261	W78902	Hs.283297	ESTs	11.17
	433332	AJ367347	Hs.127809	ESTs	11.16
	434539	AW748078	Hs.214410	ESTs	11.16
	413471	BE142098		gb:CM4-HT0137-220999-017-d11 HT0137 Homo	11.14
	410037	AB020725	Hs.58009	KIAA0918 protein	11.14
45	405601				11.13
	458332	AJ000341	Hs.220491	ESTs	11.12
	427654	AA410183	Hs.137475	ESTs	11.12
	427138	N77624	Hs.173717	phosphatidic acid phosphatase type 2B	11.10
	431475	AJ567669	Hs.287316	ESTs	11.10
50	425710	AF030880	Hs.159275	solute carrier family, member 4	11.08
	413748	AW104057	Hs.19183	ESTs	11.07
	409208	Y00093	Hs.51077	integrin, alpha X (antigen CD11C (p150),	11.07
	457278	W82745	Hs.183324	ESTs	11.03
	407021	U52077		gb:human mariner1 transposase gene, comp	11.02
55	445701	AF055581	Hs.13131	lymphocyte adaptor protein	11.02
	408338	AW867079		gb:MR1-SN0033-120400-002-c10 SN0033 Homo	10.95
	401030	BE382701	Hs.25960	v-myc avian myelocytomatosis viral relat	10.95
	437891	AW006969	Hs.6311	hypothetical protein FLJ20859	10.94
	453874	AW591783	Hs.36131	collagen, type XIV, alpha 1 (undulin)	10.94
60	421562	AA530994	Hs.105803	ghrelin precursor	10.92
	413431	AW246428	Hs.75355	ubiquitin-conjugating enzyme E2N (homolo	10.92
	400132				10.92
	436420	AA443966	Hs.31595	ESTs	10.90
	424880	NM_000328	Hs.153614	retinitis pigmentosa GTPase regulator	10.88
65	433264	D85782	Hs.3229	cysteine dioxygenase, type I	10.88
	429842	AJ386213	Hs.173422	KIAA1605 protein	10.87
	412405	AW948126		gb:RCO-MT0013-280300-031-a12 MT0013 Homo	10.85
	400815				10.80
	425018	BE245277	Hs.154196	E4F transcription factor 1	10.80

	456011	BE243628	gb:TCBAP1D1053 Pediatric pre-B cell acut	10.79
	455982	BE176862	gb:RC4-HT0587-170300-012-a04 HT0587 Homo	10.74
	450418	BE218418	Hs.201802 ESTs	10.73
5	412490	AW803564	Hs.288850 ESTs	10.72
	436962	AW377314	Hs.5364 DKFZP564I052 protein	10.70
	437743	AI383497	Hs.131811 ESTs, Weakly similar to ALU1_HUMAN ALU S	10.70
	449967	R40978	Hs.271498 ESTs, Moderately similar to ALU1_HUMAN A	10.70
	449580	AA694070	Hs.268835 ESTs	10.68
10	446035	NM_006558	Hs.13565 Sam68-like phosphotyrosine protein, T-ST	10.68
	426530	U24578	Hs.170250 complement component 4A	10.66
	428600	AW863261	Hs.15036 ESTs, Highly similar to AF161358 1 HSPC0	10.64
	420090	AA220238	Hs.94986 ribonuclease P (38kD)	10.64
	451593	AF151879	Hs.26706 CGI-121 protein	10.62
	438893	AF075031	Hs.29327 ESTs	10.62
15	458324	AW080953	gb:cc28c12.x1 NCL_CGAP_Co18 Homo sapiens	10.61
	439883	AL359652	Hs.171096 Homo sapiens EST from clone DKFZp434A041	10.58
	406513	AA715328	Hs.291205 ESTs	10.57
	407826	AA128423	Hs.40300 calpain 3, (p94)	10.57
20	419550	D50918	Hs.90998 KIAA0128 protein; septin 2	10.56
	426522	R10184	Hs.191987 ESTs, Weakly similar to ALU1_HUMAN ALU S	10.56
	459526	AI142350	Hs.146735 EST	10.55
	411448	AA178955	Hs.271439 ESTs	10.54
	410102	AW248508	Hs.278727 ESTs;	10.52
	406577			10.52
25	408405	AK001332	Hs.44672 hypothetical protein FLJ10470	10.51
	428966	AF059214	Hs.194687 cholesterol 25-hydroxylase	10.50
	400880			10.48
	415875	AA894876	Hs.5687 protein phosphatase 1B (formerly 2C), ma	10.48
30	434715	BE005346	Hs.116410 ESTs	10.46
	406851	AA609784	Hs.180255 major histocompatibility complex, class	10.44
	413409	AI638418	Hs.21745 ESTs	10.44
	418489	U76421	Hs.85302 adenosine deaminase, RNA-specific, B1 (h	10.44
	419465	AW500239	Hs.21187 Homo sapiens cDNA: FLJ23068 fis, clone L	10.44
35	419544	AI909154	gb:QV-BT200-010499-007 BT200 Homo sapien	10.44
	432180	Y18418	Hs.272822 RuvB (E coli homolog)-like 1	10.44
	413822	R08950	Hs.272044 ESTs, Weakly similar to ALU1_HUMAN ALU S	10.42
	437446	AA788946	Hs.16869 ESTs, Moderately similar to CA1C RAT COL	10.41
	415701	NM_003878	Hs.78619 gamma-glutamyl hydrolase (conjugase, fol	10.41
40	443790	NM_003500	Hs.9795 acyl-Coenzyme A oxidase 2, branched chai	10.40
	458873	AW150717	Hs.296176 STAT induced STAT inhibitor 3	10.38
	415082	AA180000	Hs.137396 ESTs	10.37
	429124	AW505086	Hs.196914 minor histocompatibility antigen HA-1	10.36
	417187	AB011151	Hs.81505 KIAA0578 protein	10.34
45	426827	AW067805	Hs.172665 methylenetetrahydrofolate dehydrogenase	10.34
	424280	NM_000030	Hs.271366 alanine-glyoxylate aminotransferase homo	10.33
	446099	T83096	Hs.17126 ESTs	10.32
	423445	NM_014324	Hs.128749 alpha-methylacyl-CoA racemase	10.31
	409995	AW960597	Hs.30164 ESTs	10.30
50	432242	AW022715	Hs.162160 ESTs, Weakly similar to ALU4_HUMAN ALU S	10.30
	406394	AA172106	Hs.110950 Rag C protein	10.30
	406189			10.29
	422283	AW411307	Hs.114311 CDC45 (cell division cycle 45, S.cerevis	10.26
	401598	AA172106	Hs.110950 Rag C protein	10.26
55	456995	T89832	Hs.170278 ESTs	10.26
	416511	NM_006762	Hs.79356 Lysosomal-associated multispanning membr	10.24
	427274	NM_005211	Hs.174142 colony stimulating factor 1 receptor, fo	10.24
	401384			10.23
	456226	D13168	Hs.82002 endothelin receptor type B	10.22
60	426928	AF037062	Hs.172914 retinol dehydrogenase 5 (11-cis and 9-cis	10.21
	423032	AI684746	Hs.119274 ESTs	10.20
	436556	AI364997	Hs.7572 ESTs	10.20
	418400	BE243026	Hs.301989 KIAA0246 protein	10.19
	437401	AA757186	Hs.121190 ESTs	10.18
	403690			10.17
65	423790	BE152393	gb:CM2-HT0323-171199-033-a08 HT0323 Homo	10.16
	434094	AA305589	Hs.238205 hypothetical protein PRO2013	10.16
	434967	AW975009	Hs.292274 ESTs	10.16
	432827	Z68128	Hs.3109 Rho GTPase activating protein 4	10.16
	432660	AI288430	Hs.64004 ESTs	10.14

5	452234	AW084176	Hs.223296	ESTs	10.14
	445629	AI245701		gbxjk31f05.x1 NCLCGAP_Kld3 Homo sapiens	10.13
	457236	AA628142	Hs.179891	ESTs, Weakly similar to KPCE_HUMAN PROTE	10.13
	444605	AI174603	Hs.254105	enolase 1, (alpha)	10.12
	450313	AI038989	Hs.24809	hypothetical protein FLJ10826	10.12
10	407482	NM_006056			10.12
	449971	AA807346	Hs.288581	Homo sapiens cDNA FLJ14296 fis, clone PL	10.11
	441201	AW118822	Hs.128757	ESTs	10.10
	435157	AW014605	Hs.179872	ESTs	10.10
	417308	H60720	Hs.81892	KIAA0101 gene product	10.09
15	442582	AI204266	Hs.179303	ESTs	10.05
	437252	AI433833	Hs.164159	ESTs, Weakly similar to ALU1_HUMAN ALU S	10.04
	448683	BE614599	Hs.106823	H.sapiens gene from PAC 42616, similar t	10.04
	434467	BE552368	Hs.231853	Homo sapiens cDNA FLJ13445 fis, clone PL	10.04
	423698	AA329798	Hs.1098	DKFZp434J1813 protein	10.02
20	412707	AW206373	Hs.16443	Homo sapiens cDNA: FLJ21721 fis, clone C	10.00
	414658	X58528	Hs.76781	ATP-binding cassette, sub-family D (ALD)	10.00
	421832	NM_016098	Hs.108725	HSPC040 protein	10.00
	423554	M90516	Hs.1674	glutamine-fructose-6-phosphate transamin	10.00
	452039	AI922988	Hs.172510	ESTs	10.00
25	434673	AW137442	Hs.136965	ESTs	10.00
	427978	AA418280	Hs.180040	Homo sapiens cDNA: FLJ22439 fis, clone H	10.00
	457803	BE501815	Hs.198011	ESTs	9.99
	428279	AA425310	Hs.155766	ESTs	9.98
	444412	AI147652	Hs.216381	Homo sapiens clone HH409 unknown mRNA	9.98
30	417049	N72394	Hs.44862	ESTs	9.96
	427509	M82505	Hs.2161	complement component 5 receptor 1 (C5a I	9.96
	445424	AB028945	Hs.12696	cortactin SH3 domain-binding protein	9.96
	443678	AW009605	Hs.231923	ESTs	9.96
	447567	AW474513	Hs.224397	ESTs, Weakly similar to B48013 proline-r	9.94
35	414709	AA704703	Hs.77031	Sp2 transcription factor	9.94
	434596	T59538		gblyb65g12.s1 Stratagene ovary (937217)	9.94
	427630	BE276115	Hs.144980	ESTs, Weakly similar to CA13_HUMAN COLLA	9.93
	416111	AA033813	Hs.79018	chromatin assembly factor 1, subunit A (	9.92
	423349	AF010258	Hs.127428	homeo box A9	9.92
40	424308	AW875531	Hs.154443	minichromosome maintenance deficient (S.	9.92
	416814	AW192307	Hs.80042	dolichyl-P-GlcMan9GlcNAc2-PP-dolichylgl	9.90
	417986	AA481003	Hs.97128	ESTs	9.90
	425174	D87450	Hs.154978	KIAA0261 protein	9.90
	438171	AW876507	Hs.293515	ESTs	9.90
45	421884	AW972187	Hs.110443	hypothetical protein FLJ22215	9.89
	408597	NM_005291	Hs.46453	G protein-coupled receptor 17	9.88
	413907	AI097570	Hs.71222	ESTs	9.87
	451298	AW801383	Hs.118578	H.sapiens mRNA for ribosomal protein L18	9.86
	433409	AI278602	Hs.25661	ESTs	9.85
50	450360	AW117416	Hs.245484	ESTs	9.85
	433104	AL043002	Hs.128246	ESTs, Moderately similar to unnamed prot	9.84
	449824	AI962552	Hs.226765	ESTs	9.84
	452744	AI267652	Hs.30504	Homo sapiens mRNA; cDNA DKFZp434E082 (fr	9.82
	431066	AF026273	Hs.249175	interleukin-1 receptor-associated kinase	9.82
55	426457	AW894667	Hs.169965	chimerin (chimaerin) 1	9.80
	443371	AI782888	Hs.145489	ESTs	9.80
	437159	AL050072		gbHomo sapiens mRNA; cDNA DKFZp566E1346	9.75
	425242	D13635	Hs.155287	KIAA0010 gene product	9.74
	447498	N67619	Hs.43687	ESTs	9.74
60	426759	AI590401	Hs.21213	ESTs	9.73
	435129	AI381659	Hs.267086	ESTs	9.72
	437672	AW748265	Hs.5741	flavohemoprotein b5+b5R	9.72
	438209	AL120659	Hs.6111	KIAA0307 gene product	9.72
	438440	AA807228	Hs.225161	ESTs	9.72
65	449720	AA311152	Hs.288708	ESTs; Weakly similar to KIAA0226 [H.sapi	9.72
	414291	AI289619	Hs.13040	ESTs	9.72
	436206	AK001451	Hs.265561	CD2-associated protein	9.70
	446896	T15767	Hs.22452	Homo sapiens cDNA: FLJ21084 fis, clone C	9.70
	412667	AW977540	Hs.269254	ESTs	9.70
	423301	S67580	Hs.1645	cytochrome P450, subfamily IVA, polypept	9.67
	440757	AW118845	Hs.160004	ESTs	9.67
	441412	AI393657	Hs.159750	ESTs	9.66
	421044	AF061871	Hs.101302	collagen, type XII, alpha 1	9.66

	414726	BE466883	Hs.280099	ESTs	9.66
	418485	R91679	Hs.124881	ESTs	9.66
	433480	X02422	Hs.181125	immunoglobulin lambda locus	9.65
	441530	AI248301	Hs.127112	ESTs	9.65
5	433533	D53304	Hs.65394	ESTs	9.65
	421470	R27496	Hs.1378	annexin A3	9.64
	438613	C05569	Hs.243122	hypothetical protein FLJ13057 similar to	9.64
	429324	AA488101	Hs.199245	inactivation escape 1	9.62
	450244	AA007534	Hs.125062	ESTs	9.62
10	407660	AW063190	Hs.279101	ESTs	9.61
	406554				9.60
	426404	AA377607	Hs.273138	ESTs	9.58
	447045	AW392394	Hs.278569	KIAA0064 gene product	9.58
	449894	AK001578	Hs.24129	hypothetical protein FLJ10716	9.58
15	448376	AI494332	Hs.196963	ESTs	9.58
	407902	AL117474	Hs.41181	Homo sapiens mRNA; cDNA DKFZp727C191 (fr	9.56
	446572	AV659151	Hs.282961	ESTs	9.56
	459245	BE242623	Hs.31939	manic fringe (Drosophila) homolog	9.55
	423545	AP000692	Hs.129781	chromosome 21 open reading frame 5	9.54
20	414697	BE266134	Hs.76927	translocase of outer mitochondrial membr	9.54
	410846	AW807057		gb:MR4-ST0062-031199-018-b03 ST0062 Homo	9.52
	421181	NM_005574	Hs.184585	LJM domain only 2 (rhombotin-like 1)	9.52
	427308	D26067	Hs.174905	KIAA0033 protein	9.52
	415995	NM_004573	Hs.994	phospholipase C, beta 2	9.51
25	434846	AW295389	Hs.119768	ESTs	9.51
	414342	AA742181	Hs.75912	Homo sapiens cDNA: FLJ22199 fis, clone H	9.50
	416959	D28459	Hs.80612	ubiquitin-conjugating enzyme E2A (RAD6 h	9.50
	443123	AA094538	Hs.6588	ESTs	9.50
	439312	AA833902	Hs.270745	ESTs	9.48
30	449375	R07114	Hs.271224	ESTs	9.48
	436357	AJ132085		gb:Homo sapiens mRNA for axonemal dynein	9.44
	458723	AW137726	Hs.244352	ESTs, Moderately similar to laminin alph	9.44
	457526	AW450584	Hs.192131	ESTs, Weakly similar to RIBB [H.sapiens]	9.43
	404741				9.43
35	422409	NM_005428	Hs.116237	vav 1 oncogene	9.43
	403708				9.42
	408806	AW847814	Hs.289005	Homo sapiens cDNA: FLJ21532 fis, clone C	9.42
	417380	T06809		gb:EST04698 Fetal brain, Stralagene (cat	9.42
40	422501	AA354690	Hs.144967	ESTs	9.42
	426187	AA004410	Hs.167835	acyl-Coenzyme A oxidase 1, palmitoyl	9.42
	452624	AL0076606	Hs.30054	coagulation factor V (proaccelerin, labi	9.42
	412110	AW893569		gb:RC0-NN0021-040400-021-c10 NN0021 Homo	9.41
	414158	AA361623	Hs.288775	Homo sapiens cDNA FLJ13900 fis, clone TH	9.41
	408101	AW868504	Hs.123073	CDC2-related protein kinase 7	9.40
45	414171	AA360328	Hs.865	RAP1A, member of RAS oncogene family	9.40
	415947	U04045	Hs.78934	mutS (E. coli) homolog 2 (colon cancer,	9.40
	426959	BE262745		gb:01153869F1 NIH_MGC_19 Homo sapiens c	9.39
	417519	AI689987	Hs.177669	ESTs, Weakly similar to RMS1_HUMAN REGUL	9.39
	457181	BE514362	Hs.296422	FK506-binding protein 3 (25kD)	9.39
50	402835				9.38
	404632				9.38
	446566	H95741	Hs.17914	Homo sapiens cDNA: FLJ22801 fis, clone K	9.37
	455369	AW903533		gb:CM1-NN1031-060400-179-d05 NN1031 Homo	9.37
	444001	AI095087	Hs.152299	ESTs, Moderately similar to ALU5_HUMAN A	9.36
55	458191	AI420611	Hs.127832	ESTs	9.36
	431374	BE258532	Hs.251871	CTP synthase	9.34
	429327	AA283981	Hs.189248	prostaglandin E receptor 4 (subtype EP4)	9.33
	407061	X97748		gb:H.sapiens PTX3 gene promotor region.	9.33
	416967	BE616731	Hs.80645	interferon regulatory factor 1	9.33
60	423013	AW875443	Hs.22209	secreted modular calcium-binding protein	9.33
	439461	AA693960	Hs.103158	ESTs	9.33
	418830	BE513731	Hs.88959	Human DNA sequence from clone 967N21 on	9.32
	422763	AA033699	Hs.83938	ESTs, Moderately similar to MASP-2 [H.sa	9.32
	442739	NM_007274	Hs.8679	cytosolic acyl coenzyme A thioester hydr	9.32
65	452859	AI300555	Hs.288158	Homo sapiens cDNA: FLJ23591 fis, clone L	9.32
	403237				9.32
	415000	AW025529	Hs.239812	ESTs, Weakly similar to CALM_HUMAN CALMO	9.31
	417951	AW976410	Hs.289069	Homo sapiens cDNA: FLJ21016 fis, clone C	9.30
	419066	Z98492	Hs.6975	PRO1073 protein	9.30

	448443	AW167128	Hs.231934	ESTs	9.30
	405125				9.30
	409768	AW499566		gb:U1-HF-BR0p-aj-h-03-0-ULr1 NIH_MGC_5	9.28
5	453708	AI191811	Hs.54629	ESTs	9.28
	442271	AF000652	Hs.8180	syndecan binding protein (syntenin)	9.27
	410055	AJ250839	Hs.58241	gene for serine/threonine protein kinase	9.26
	448692	AW013907	Hs.224276	ESTs, Moderately similar to predicted us	9.26
	417381	AF164142	Hs.82042	solute carrier family 23 (nucleobase tra	9.25
	422497	D28642	Hs.1528	KIAA0053 gene product	9.25
10	414140	AA281279	Hs.23317	ESTs	9.24
	435980	AF274571	Hs.129142	ESTs; Weakly similar to DEOXYRIBONUCLEAS	9.24
	458530	BE395035	Hs.199889	ESTs, Weakly similar to KIAA0874 protein	9.24
	402585				9.24
	420819	AA280700		gb:zs95h11.s1 NCLCGAP_GCB1 Homo sapiens	9.23
15	444755	AA431791	Hs.183001	ESTs	9.22
	411630	U42349	Hs.71119	Putative prostate cancer tumor suppressor	9.22
	421246	AW582962	Hs.300961	ESTs, Highly similar to AF151805 1 CGI-4	9.20
	421924	BE514514	Hs.109606	coronin, actin-binding protein, 1A	9.19
	414888	AL039185	Hs.77558	thyroid hormone receptor interactor 7	9.18
20	434267	AI206569	Hs.116243	ESTs	9.17
	409213	U61412	Hs.51133	PTK6 protein tyrosine kinase 6	9.17
	428242	H55709	Hs.2250	leukemia inhibitory factor (cholinergic	9.16
	451736	AW080356	Hs.293684	ESTs, Weakly similar to alternatively sp	9.15
	413627	BE182082	Hs.246973	ESTs	9.14
25	416134	AA528402	Hs.74861	activated RNA polymerase II transcriptio	9.14
	448251	AW151660	Hs.31444	ESTs	9.14
	452813	U54727	Hs.191445	ESTs	9.14
	443622	AI911527	Hs.11805	ESTs	9.14
30	413260	BE075281		gb:PM1-BT0585-290200-005-d07 BT0585 Homo	9.12
	413450	Z99716	Hs.75372	N-acetylgalactosaminidase, alpha-	9.12
	446442	BE221533	Hs.257858	ESTs	9.12
	438540	AA810021	Hs.136906	ESTs	9.12
	426251	M24283	Hs.168383	intercellular adhesion molecule 1 (CD54)	9.11
	410290	AA402307	Hs.73818	ubiquinol-cytochrome c reductase hinge p	9.10
35	437398	AA913736	Hs.126715	ESTs	9.10
	421559	NM_014720	Hs.105751	Ste20-related serine/threonine kinase	9.10
	439699	AF086534	Hs.187561	ESTs, Moderately similar to ALLU1_HUMAN A	9.10
	430799	C19035	Hs.164259	ESTs	9.09
40	424544	M88700	Hs.150403	dopa decarboxylase (aromatic L-amino aci	9.08
	453942	AW190920	Hs.19928	ESTs	9.08
	425844	T68073	Hs.159628	serine (or cysteine) proteinase inhibito	9.08
	434658	AI624436	Hs.194488	ESTs	9.07
	453999	BE328153	Hs.240087	ESTs	9.06
	438490	R71543	Hs.18713	ESTs	9.05
45	409192	AA065131	Hs.233439	ESTs, Weakly similar to ALU7_HUMAN ALU S	9.05
	446223	BE300091	Hs.119699	hypothetical protein FLJ12969	9.04
	447247	AW369351	Hs.287955	Homo sapiens cDNA FLJ13090 fis, clone NT	9.04
	450094	AI174947	Hs.295789	Homo sapiens mRNA; cDNA DKFZp564D1164 (f	9.04
	432012	AW301344	Hs.195969	ESTs	9.04
50	422520	ALU076730	Hs.117877	kinesin 2 (60-70kD)	9.02
	418650	BE386750	Hs.86978	prolyl endopeptidase	9.02
	423008	M81590	Hs.123016	5-hydroxytryptamine (serotonin) receptor	9.02
	436476	AA328108	Hs.53631	ESTs	9.02
	448206	BE622585	Hs.3731	ESTs	9.02
55	431574	AW572659	Hs.261373	adenosine A2b receptor pseudogene	9.01
	443453	R99876	Hs.269882	ESTs	9.01
	435472	AW972330	Hs.283022	triggering receptor expressed on myeloid	9.01
	420337	AW295840	Hs.14555	Homo sapiens cDNA: FLJ21513 fis, clone C	9.00
	449810	AB008681	Hs.23994	activin A receptor, type IIB	9.00
60	406780	AA902386	Hs.286	ribosomal protein L4	8.99
	429169	AW341130	Hs.197757	ESTs, Moderately similar to FGFE_HUMAN F	8.99
	421326	AF051428	Hs.103504	estrogen receptor 2 (ER beta)	8.97
	425491	AA883316	Hs.255221	ESTs	8.96
	425516	BE000707	Hs.29567	ESTs	8.96
65	439773	AI051313	Hs.143315	ESTs	8.96
	443247	BE614387	Hs.47378	ESTs	8.96
	456623	AI084125	Hs.108106	transcription factor	8.95
	438707	L08239	Hs.5326	porcupine	8.95
	402240				8.95



	444152	AI125694	Hs.149305	Homo sapiens cDNA FLJ14264 fis, clone PL	8.95
	408842	AW501756		gb:U1-HF-BR0p-ajm-c-09-0-U1.r1 NIH_MGC_5	8.94
	416277	W78765	Hs.73580	ESTs	8.94
	456697	AI908006	Hs.111334	ferritin, light polypeptide	8.94
5	410762	AF226053	Hs.66170	HSKM-B protein	8.92
	412942	AL120344	Hs.75074	mitogen-activated protein kinase-activat	8.92
	442320	AI287817	Hs.129636	ESTs	8.92
	449673	AA002084	Hs.18920	ESTs	8.91
	411486	N85785	Hs.181165	eukaryotic translation elongation factor	8.90
10	437916	BE566249	Hs.20999	Homo sapiens cDNA: FLJ23142 fis, clone L	8.90
	442732	AA257161	Hs.8658	hypothetical protein DKFZp434E0321	8.89
	419741	NM_007019	Hs.93002	ubiquitin carrier protein E2-C	8.89
	411499	AW849292		gb:IL3-CT0215-020300-090-E06 CT0215 Homo	8.89
	431154	AW971228	Hs.290259	ESTs	8.89
15	414922	D00723	Hs.77631	glycine cleavage system protein H (amino	8.88
	418036	Z37976	Hs.83337	latent transforming growth factor beta b	8.87
	408422				8.87
	422926	NM_016102	Hs.121748	ring finger protein 16	8.87
	435220	D50030	Hs.104	HGF activator	8.86
20	418203	X54942	Hs.83758	CDC28 protein kinase 2	8.86
	418613	AA744529	Hs.86575	mitogen-activated protein kinase kinase	8.85
	439250	H66566	Hs.271711	ESTs	8.85
	432359	AA076049	Hs.274415	Homo sapiens cDNA FLJ10229 fis, clone HE	8.84
	450000	AI952797	Hs.10888	Homo sapiens cDNA: FLJ21559 fis, clone C	8.83
25	425657	T89839	Hs.119471	ESTs	8.83
	425694	U51333	Hs.159237	hexokinase 3 (white cell)	8.82
	419972	AL041465	Hs.294038	ESTs, Moderately similar to ALU2_HUMAN A	8.82
	436396	AI683487	Hs.299112	Homo sapiens cDNA FLJ11441 fis, clone HE	8.82
	413413	D82520	Hs.301834	Homo sapiens cDNA FLJ10952 fis, clone PL	8.82
30	428807	AA435997	Hs.104930	ESTs	8.82
	415839	R40611	Hs.137565	ESTs	8.81
	419553	N34145	Hs.250614	ESTs	8.80
	420309	AW043637	Hs.21766	ESTs	8.80
	421863	AI952677	Hs.108972	Homo sapiens mRNA; cDNA DKFZp434P228 (fr	8.80
35	447965	AW292577	Hs.94445	ESTs	8.80
	459172	BE063380		gb:PM0-BT0275-291099-002-g10 BT0275 Homo	8.80
	403259				8.78
	411534	AW850473		gb:IL3-CT0219-280100-061-B11 CT0219 Homo	8.78
	456161	BE264645	Hs.282093	Homo sapiens cDNA: FLJ21918 fis, clone H	8.77
40	413654	AA331881	Hs.75454	peroxiredoxin 3	8.76
	401744				8.76
	425348	AL137477	Hs.155912	cadherin-like 24	8.76
	423396	AI382555	Hs.127950	bromodomain-containing 1	8.75
	450649	NM_001429	Hs.297722	Human DNA sequence from clone RP1-85F18	8.75
45	408331	NM_007240	Hs.44229	dual specificity phosphatase 12	8.74
	423872	AB020316	Hs.134015	uronyl 2-sulfotransferase	8.74
	424906	AI566086	Hs.153716	Homo sapiens mRNA for Hmob33 protein, 3'	8.74
	427596	AA449506	Hs.179765	Homo sapiens mRNA; cDNA DKFZp586H1921 (f	8.73
	432488	AA551010	Hs.216640	ESTs	8.72
50	448990	AL137527	Hs.22703	Homo sapiens mRNA; cDNA DKFZp434P1018 (f	8.72
	429455	AI472111	Hs.292507	ESTs	8.71
	429855	AW385597	Hs.138902	ESTs, Weakly similar to B34087 hypotheti	8.71
	441748	H59955	Hs.127829	ESTs	8.70
	411945	AL033527	Hs.92137	v-myc avian myelocytomatosis viral oncog	8.70
55	413492	D87470	Hs.75400	KIAA0280 protein	8.70
	435706	W31254	Hs.7045	GL004 protein	8.70
	433741	AA608019	Hs.159343	ESTs	8.70
	426340	Z97989	Hs.169370	FYN oncogene related to SRC, FGR, YES	8.69
	422779	AA317036	Hs.41989	ESTs	8.67
60	449785	AI225235	Hs.288300	Homo sapiens cDNA: FLJ23231 fis, clone C	8.67
	420144	AA811813	Hs.119421	ESTs	8.66
	420235	AA256756	Hs.31178	ESTs	8.66
	432606	NM_002104	Hs.3066	granzyme K (serine protease, granzyme 3;	8.66
	425762	BE244076	Hs.159578	Homo sapiens mRNA for FLJ00020 protein,	8.65
65	427448	BE246449	Hs.2157	Wiskott-Aldrich syndrome (eczema-thrombo	8.64
	418033	W68180	Hs.259855	Homo sapiens cDNA FLJ12507 fis, clone NT	8.64
	429084	AJ001443	Hs.195614	splicing factor 3b, subunit 3, 130kD	8.64
	417094	NM_006895	Hs.81182	histamine N-methyltransferase	8.64
	457277	NM_004736	Hs.227656	xenotropic and polytropic retrovirus rec	8.63

	422631	BE218919	Hs.118793	hypothetical protein FLJ10688	8.63
	410879	AW785196	Hs.215857	ring finger protein 14	8.63
	431585	BE242803	Hs.262823	hypothetical protein FLJ10326	8.62
	401851				8.62
5	401866				8.62
	407783	AW996872	Hs.172028	a disintegrin and metalloproteinase doma	8.62
	408242	AA251594	Hs.43913	PIBF1 gene product	8.62
	422250	AW408530	Hs.113823	CipX (caseinolytic protease X, E. coli)	8.62
	430259	BE550182	Hs.127826	RalGEF-like protein 3, mouse homolog	8.62
10	452598	AI831594	Hs.68647	ESTs, Weakly similar to ALU7_HUMAN ALU S	8.62
	419541	AW749617		gb:RC3-BT0502-130100-012-g07 BT0502 Homo	8.60
	428839	AI767756	Hs.82302	ESTs	8.60
	428328	AA829402	Hs.47839	ESTs	8.60
	451491	AI972094	Hs.286221	Homo sapiens cDNA FLJ13741 fis, clone PL	8.60
15	452561	AI692181	Hs.49169	KIAA1634 protein	8.60
	420027	AF009746	Hs.94395	ATP-binding cassette, sub-family D (ALD)	8.60
	435205	X54136	Hs.181125	immunoglobulin lambda locus	8.60
	430900	U91939	Hs.248123	G protein-coupled receptor 25	8.60
	405074				8.59
20	437891	AI479773	Hs.181679	ESTs	8.59
	438346	BE328882	Hs.193096	ESTs, Moderately similar to U119_HUMAN U	8.58
	411079	AA091228		gb:chr2152.seq.F Human fetal heart, Lam	8.57
	418452	BE379749	Hs.85201	C-type (calcium dependent, carbohydrate-	8.56
	429109	AL008637	Hs.196352	neutrophil cytosolic factor 4 (40kD)	8.56
25	448019	AW947164	Hs.195641	ESTs	8.56
	449865	AW204272	Hs.189371	ESTs	8.55
	431180	H55883		gb:yg94h03.r1 Scores fetal liver spleen	8.54
	445988	BE007663	Hs.13503	inactivation escape 2	8.54
	405876				8.54
30	407235	D20569	Hs.169407	SAC2 (suppressor of actin mutations 2, y	8.54
	414807	AI738616	Hs.77348	hydroxyprostaglandin dehydrogenase 15-(N	8.54
	425671	AF193812	Hs.159142	lunatic fringe (Drosophila) homolog	8.54
	452413	AW082633	Hs.212715	ESTs	8.54
	421620	AA446183	Hs.91885	ESTs	8.53
35	444539	AI955765	Hs.146907	ESTs	8.52
	415102	M31899	Hs.77929	excision repair cross-complementing rode	8.51
	405552				8.51
	418068	AW871155	Hs.293902	ESTs, Weakly similar to prolyl 4-hydroxy	8.50
40	420133	AA426117	Hs.14373	ESTs	8.50
	438887	R68857	Hs.265499	ESTs	8.50
	446468	AI765890	Hs.16341	ESTs; Moderately similar to IIII ALU SUB	8.50
	446585	AV659397	Hs.282948	ESTs	8.50
	441896	AW891873		gb:CM3-NT0090-040500-173-b02 NT0090 Homo	8.50
	437718	AI927288	Hs.198779	ESTs	8.48
45	420656	AA279098	Hs.187636	ESTs	8.48
	429303	AW137635	Hs.44238	ESTs	8.48
	450624	AL043983	Hs.125063	Homo sapiens cDNA FLJ13825 fis, clone TH	8.48
	452573	AI907957	Hs.287622	Homo sapiens cDNA FLJ14082 fis, clone HE	8.48
	456341	AA229126	Hs.122647	N-myristoyltransferase 2	8.48
50	423024	AA593731	Hs.75613	CD36 antigen (collagen type I receptor,	8.47
	446985	AL038704	Hs.156827	ESTs, Weakly similar to ALU1_HUMAN ALU S	8.46
	431778	AL080276	Hs.268582	regulator of G-protein signalling 17	8.46
	400268				8.46
	421828	AW891985	Hs.289109	dimethylarginine dimethylaminohydrolase	8.45
55	417022	NM_014737	Hs.80905	Ras association (RalGDS/AF-6) domain fam	8.44
	421029	AW057782	Hs.293053	ESTs	8.44
	425171	AW732240	Hs.300615	ESTs	8.44
	459070	AI814302		gb:wj71c12.x1 NCI_CGAP_Lu19 Homo sapiens	8.42
	406006				8.42
60	412643	AW971239	Hs.293982	ESTs	8.42
	424775	AB014540	Hs.153026	SWAP-70 protein	8.42
	446848	AW136083	Hs.195268	ESTs, Weakly similar to S59501 interfero	8.42
	448043	AI458653	Hs.201881	ESTs	8.41
	407183	AA358015		gb:EST66864 Fetal lung III Homo sapiens	8.40
65	412324	AW978439	Hs.69504	ESTs	8.40
	419594	AA013051	Hs.91417	topoisomerase (DNA) II binding protein	8.40
	430968	AW872830		gb:EST384925 MAGe resequences, MAGL Homo	8.40
	431689	AA305688	Hs.267695	UDP-Gal-beta-GlcNAc-beta 1,3-galactosyl	8.40
	438582	AI521310	Hs.283365	ESTs, Weakly similar to ALU5_HUMAN ALU S	8.40

	447685	AL122043	Hs.19221	hypothetical protein DKFZp566G1424	8.40
	459119	AW844498	Hs.289052	Homo sapiens LENG8 mRNA, variant C, part	8.38
	400817				8.37
	425265	BE245297		gb:TCBAP1E2482 Pediatric pre-B cell acut	8.37
5	409385	AA071267		gb:zm61g01.r1 Stratagene fibroblast (837	8.36
	439121	BE047779	Hs.44701	ESTs	8.36
	419668	X04430	Hs.93913	interleukin 6 (interferon, beta 2)	8.38
	408327	AW182309	Hs.249963	ESTs, Highly similar to dJ1170K4.4 [H.sa	8.35
	403976				8.34
10	448064	AA379036		gb:EST91809 Synovial sarcoma Homo sapien	8.33
	442914	AW188551	Hs.99519	Homo sapiens cDNA FLJ14007 fis, clone Y7	8.33
	428032	AW997704	Hs.11493	Homo sapiens cDNA FLJ13536 fis, clone PL	8.32
	434194	AF119847	Hs.283940	Homo sapiens PRO1550 mRNA, partial cds	8.32
	458677	AW937670	Hs.254379	ESTs	8.32
15	420925	NM_015698	Hs.100391	T54 protein	8.30
	416475	T70298		gb:yd26g02.s1 Soares fetal liver spleen	8.30
	416852	AF283776	Hs.80285	Homo sapiens mRNA; cDNA DKFZp586C1723 (f	8.30
	430676	AF084866		gb:Homo sapiens envelope protein RIC-3 (	8.30
	428455	AI732694	Hs.98520	ESTs	8.29
20	435343	AW194962	Hs.199028	ESTs	8.29
	450783	BE266695		gb:601190242F1 NIH_MGC_7 Homo sapiens cD	8.29
	404946				8.28
	422942	AF054839	Hs.122540	tetraspan 2	8.28
	453716	AA037675	Hs.152675	ESTs	8.28
25	437098	AA744488	Hs.132842	ESTs, Moderately similar to ALU1_HUMAN A	8.28
	443907	AU076484	Hs.9963	TYRO protein tyrosine kinase binding pro	8.27
	401930	AF106069	Hs.23168	ubiquitin specific protease 15	8.26
	446554	AA151730	Hs.301789	ESTs, Weakly similar to similar to C.ele	8.26
	426280	AB007918	Hs.169182	KIAA0449 protein	8.25
30	419904	AA974411	Hs.18672	ESTs	8.25
	413886	AW958284	Hs.103832	ESTs, Weakly similar to TRHY_HUMAN TRICH	8.24
	424738	AI963740	Hs.46826	ESTs	8.24
	427359	AW020782	Hs.79881	Homo sapiens cDNA: FLJ23006 fis, clone L	8.24
	424534	D87682	Hs.150275	KIAA0241 protein	8.24
35	424429	U63830	Hs.146847	TRAF family member-associated NFKB activ	8.24
	442604	BE263710	Hs.279904	ESTs	8.22
	442992	AI914699	Hs.13297	ESTs	8.22
	427210	BE396283	Hs.173987	eukaryotic translation initiation factor	8.22
	457228	BE222450	Hs.266390	ESTs	8.21
40	423730	AA330214		gb:EST33935 Embryo, 12 week II Homo sapi	8.21
	411928	AA888624	Hs.19121	adaptor-related protein complex 2, alpha	8.20
	416051	AA835888	Hs.25253	Homo sapiens cDNA: FLJ20935 fis, clone A	8.20
	417231	R40739	Hs.21326	ESTs	8.20
	422049	W25780	Hs.77631	glycine cleavage system protein H (amino	8.20
45	427528	AU077143	Hs.179565	minichromosome maintenance deficient (S.	8.20
	458776	AV654978	Hs.19904	cystathionase (cystathionine gamma-lyase	8.19
	417687	AI828596	Hs.250691	ESTs	8.18
	423218	NM_015896	Hs.167380	BLU protein	8.18
	425397	J04088	Hs.156346	topoisomerase (DNA) II alpha (170kD)	8.18
50	406984	M21305	Hs.247946	Human alpha satellite and satellite 3 ju	8.18
	402401	U42349	Hs.71119	Putative prostate cancer tumor suppresso	8.18
	423397	NM_001838	Hs.1652	chemokine (C-C motif) receptor 7	8.18
	427857	AL133017	Hs.2210	thyroid hormone receptor interactor 3	8.17
	401519				8.17
55	447188	H65423	Hs.17631	Homo sapiens cDNA FLJ20118 fis, clone CO	8.16
	424704	AI263293	Hs.152096	cytochrome P450, subfamily IIJ (arachido	8.16
	435854	AJ278120	Hs.4896	DKFZP564D166 protein	8.14
	448556	AW885606	Hs.5064	ESTs	8.14
	449217	AA278536	Hs.23262	ribonuclease, RNase A family, k6	8.14
60	453124	AI139058	Hs.23296	ESTs	8.14
	442812	AI018408	Hs.131284	ESTs	8.14
	421129	BE439899	Hs.89271	ESTs	8.14

**TABLE 9A** shows the accession numbers for those primekeys lacking a unigeneID in Table 9. For each probeset we have listed the gene cluster number from which the oligonucleotides were designed. Gene clusters were compiled using sequences derived from Genbank ESTs and mRNAs. These sequences were clustered based on sequence similarity using Clustering and Alignment Tools (DoubleTwist, Oakland California). The Genbank accession numbers for sequences comprising each cluster are listed in the "Accession" column.

10	Pkey: CAT number: Accession:	Unique Eos probeset identifier number Gene cluster number Genbank accession numbers	
15	Pkey	CAT number	Accession
	408057	1035720_1	AW139565
	408069	103655_1	H81795 Z42291 R20973 AA046920
	408182	104479_1	AA047854 AA057506 AA053841
20	408338	1052148_1	AW867079 AW867088 AW182772
	408828	108463_1	BE540279 AW410659 AA057857 R77693 BE278674
	409126	110159_1	AA063426 AW862323 AW408063 AA063503 AA772827 AW753492 BE175371 AA311147
	409292	111586_1	AA071051 AA070584 AA069938 AA102136 AA074430
	409314	111841_1	AA070266 AA084967 AA126998
25	409385	112523_1	AA071267 T65940 T64515 AA071334
	409398	1126716_1	AW386461 AW876408 AW386672 AW386599 AW876258 AW386619 AW386289 AW876136 AW876203 AW876213 AW876301 AW876295 AW876349 AW876365 AW876160 AW876369 AW876352 AW876271
	409671	114731_1	AA076769 AA076781 AJ087968
	409768	1154035_1	AW499566 AW502378 AW499522 AW502046 AW502671 AW501917 AW501868 AW501721 AW502813
30	409841	1156088_1	AW502139 AW502432 AW502235 AW501683 AW502647
	409842	1156119_1	AW501756 AW502096 AW502465 AW501715
	409853	1156226_1	AW502327 AW502488 AW501829 AW502625 AW502687
	410531	1207200_1	AW752953 H88044 BE156092
	410688	1216101_1	AW796342 AW796356 BE161430
35	410846	1223902_1	AW807057 AW807054 AW807189 AW807193 AW807369 AW807429 AW807364 AW807365 AW807078 AW807256 AW807180 AW807331
	410896	1226053_1	AW809537 AW809697 AW810554 AW809707 AW809885 AW810000 AW810088 AW809742 AW809816 AW809749 AW809639 AW809722 AW809836 AW809774 AW810023 AW810013 AW809813 AW809660 AW809728 AW809768 AW809951 AW809657 AW809954
40	411079	123128_1	AA091228 H71860 H71073
	411424	1245497_1	AW845985 AW845991 AW845982
	411499	1248105_1	AW849292 AW849431 AW849422 AW849428 AW849420 AW849424 AW849427
	411507	1248607_1	AW850140 AW850185 AW850192
	411534	1248827_1	AW850473 AW850471 AW850431 AW850523
45	411972	1268491_1	BE074959 AW880160
	412110	1277844_1	AW893569 AW893571 AW893588 AW893593
	412226	1284289_1	W26786 AW998612 AW902272
	412257	1285376_1	AW903830 BE071918
	412405	1293012_1	AW948126 AW948139 AW948198 AW948145 AW948162 AW948134 AW948127 AW948124 AW948153 AW948157 AW948125 AW948131 AW948158 AW948164 AW948151
50	413260	1356003_1	BE075281 BE075219 BE075123 BE075119 BE075046
	413471	1371778_1	BE142098 BE142092
	413729	1385114_1	BE159989 BE160056 BE160107 BE160139
	414182	142409_1	AA136301 AJ381776 AA136321
55	414989	1511339_1	T81668 C19040 C17569
	415354	1534763_1	F06495 R24336 R13046
	416011	1566439_1	H14487 R50911 Z43216
	416475	1596398_1	T70298 H58072 R02750
	417380	1672461_1	T06809 N75735
60	419392	1843934_1	W28573
	419541	185724_1	AW749617 R64714 AA244138 AA244137 BE094019
	419544	185760_2	AI909154 AA526337 AA244193 AI909153
	420819	196721_1	AA280700 AW975494 AA687385
	421245	200620_1	AA285363 AA285333 AA285359 AA285326 AA285350
65	422673	219674_1	N59027 AA314694 N53937 R08100

	422695	219996_1	AA315158 AW861298 N76067 AW802759 AI858485 WD4474
	422858	222209_1	R35398 BE252178 AA318153
	422940	223106_1	BE077458 AA337277 AA318285
5	423730	231482_1	AA330214 AW982519 T54709
	423790	232031_1	BE162393 AA330984 BE073804
	424385	238731_1	AA338666 AW952809 AA348119
	424606	241409_1	AA343936 AA344060 AW963081
	425265	249175_1	BE245297 AA353976 AW505023
	426959	273830_1	BE262745
10	430676	32168_1	AF084866 AF084870 AF084864 AF084867 AF084869 AF084865 AF084868 AW818206 AW812038 BE144813 BE144812 AW812041 AW812040 AW812067 BE061583 BE061604 T05808 AI352469 AA580921 BE141783 BE141782 BE081601 AW814393 AW885029
	430968	326269_1	AW972830 AA527647 AA488820 AA570362
15	431180	328906_1	H55883 AW971249 AA493900 H55788
	432093	341283_1	H28383 AW972670 H28359 AA525808
	434596	38937_1	T59538 T59589 T59598 T59542 AF147374
	436357	41842_1	AI132085 Z83805
	437159	43393_1	AL050072 AW900148
	437495	43765_1	BE177778 BE177779 AL390180 AA359908
20	439097	46858_1	H66948 AF085954 H66949
	439120	46879_1	H56389 AF085977 H56173
	440134	48675_1	BE410734 BE560117 BE270054 BE296330 BE267957 AI003007 BE545259
	441896	52842_1	AW891873 AW891897 BE564764
25	445629	645767_1	AI245701 BE272724
	447229	71288_1	BE617135 AW504051 AW504283
	448064	74761_1	AA379036 AA150589 AI696854 BE621316
	450783	84855_1	BE266695 BE265474 N53200 BE267333
	451045	85673_1	AA215672 AI696628 AA013335 H86334 AA017006
	452549	921802_1	AI907039 AI907081
30	452560	922216_1	BE077084 AW139963 AW883127 AW806209 AW806204 AW806205 AW806206 AW806211 AW806212 AW806207 AW806208 AW806210 AI807487
	452712	928309_1	AW838616 AW838660 BE144343 AI914520 AW888910 BE184854 BE184784
	453758	980026_1	U83527 AL120938 U83522
35	454093	1007366_1	AW860158 AW862385 AW860159 AW862386 AW862341 AW821869 AW821893 AW062660 AW062656
	454563	1224342_1	AW807530 AW807540 AW807537 AW846086 BE141634 AW846089 AW807499 AW807533 AW838499
	454791	1234759_1	BE071874 BE071882 AW820782 AW821007
	454977	1247099_1	AW848032 AW848630 AW848478 AW848623 AW848484 AW848169 AW848830 AW848149 AW848119 AW848893 AW848903 AW848407
40	455131	1254674_1	AW857913 AW857916 AW857914 AW861627 AW861626 AW861624
	455183	1259023_1	AW984111 AW863918 AW863856
	455254	1266449_1	AW877015 AW877133 AW876978 AW877071 AW876988 AW877069 AW877063 AW877013
	455369	1285173_16	AW903533 AW903516 AW903562 BE085202 BE085215 BE085214 BE085209 BE085172 BE085175 BE085193 BE085211 BE085199
45	455982	1396849_1	BE176862 BE176876 BE176947 BE176878
	456011	1410860_1	BE243628 BE246081 BE247016 BE241984 BE241534 BE246091 BE245679 BE243620 BE245998 BE242329 BE241417 BE241457 BE242522 BE241989 BE241464
	456023	1416335_1	R00028 BE247630
	457586	360506_1	AW082439 AW751554 AA579463
50	457595	364225_1	AA584854
	457751	399422_1	AI908236 AA663731
	459070	883688_1	AI814302 AI814428
	459081	889426_1	W07808 AI822068
	459145	918957_1	AI903354 AI803489 AI903488
	459172	921149_1	BE063380 BE063346 AI906097
55	459234	945240_1	AI940425

**TABLE 9B** shows the genomic positioning for those primekeys lacking unigene ID's and accession numbers in Table 9. For each predicted exon, we have listed the genomic sequence source used for prediction. Nucleotide locations of each predicted exon are also listed.

5

Source used for prediction: Nucleotide locations of each predicted exon are also listed.

Key: Unique number corresponding to an Eos probeset  
Ref: Sequence source. The 7 digit numbers in this column are Genbank Identifier (GI) numbers. "Dunham I. et al." refers to the publication entitled "The DNA sequence of human chromosome 22." Dunham I. et al., Nature (1999) 402:489-495.  
Strand: Indicates DNA strand from which exons were predicted.  
Nt\_position: Indicates nucleotide positions of predicted exons.

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	Key	Ref	Strand	Nt_position
15	400452	8113550	Minus	90308-90505
	400557	9801261	Plus	208453-208528,209633-209813
	400615	9908994	Plus	118036-118166,118681-118807
	400802	8567867	Minus	174571-174856
	400817	8569994	Plus	170793-170948
20	400880	9931121	Plus	29235-29336,36363-36580
	400885	9958187	Minus	58242-58733
	400926	7651921	Minus	52033-52158,53956-54120,54957-55052,55420-55480,56452-56666,57221-57718
	400952	7658481	Plus	192667-192826,194387-194876
	400991	8096825	Plus	159197-159320
25	401044	8117619	Plus	73501-73874
	401124	8570295	Minus	124181-124391
	401163	6981820	Plus	5302-5545
	401201	9743387	Minus	138534-138629,139234-139294,140121-140335,142033-142479
	401286	9801342	Minus	147036-147318
30	401384	6850939	Minus	58360-58545
	401468	6433826	Plus	13056-13482
	401515	7630851	Plus	29929-30126
	401519	6649315	Plus	157315-157950
	401672	9838136	Plus	128526-128704,130755-130860
35	401744	2576349	Plus	14595-14751
	401851	7770425	Minus	146443-146664,147794-147971,148351-148480,148980-149111,149801-149949
	401866	8018106	Plus	73126-73623
	402240	7690131	Plus	104382-104527,106136-106372
	402359	9211204	Minus	40403-41961
40	402585	8908890	Minus	174893-175050,183210-183435
	402788	9786102	Plus	98273-101430
	402802	3287156	Minus	53242-53432
	402812	6010110	Plus	25026-25091,25844-25920
	402828	8918414	Plus	69071-69642
45	402835	9187337	Plus	26981-27101
	402838	9369121	Minus	32589-32735,35478-35666
	402842	9369121	Minus	76355-76479
	402895	9967547	Plus	85537-85671,86379-86469
	402964	9581599	Minus	46824-46784
50	403137	9211494	Minus	92349-92572,92958-93084,93579-93712,93949-94072,94591-94748,95214-95337
	403237	7637807	Plus	7271-7527
	403259	7770585	Plus	4693-4857
	403683	7331517	Plus	217175-217446
	403690	7387384	Minus	78627-79583
55	403708	5705981	Minus	134394-134812
	403838	4176355	Plus	19197-19502
	403851	7708872	Plus	22733-23007
	403976	7657840	Plus	24755-24969
	404407	7329316	Minus	48154-48499
60	404426	7407959	Plus	77842-77954
	404632	9786668	Plus	45096-45229
	404741	8574139	Plus	143025-143467
	404756	7706327	Plus	82849-83627
	404946	7382189	Plus	134445-134750
65	405074	7770440	Plus	44340-44559,44790-45059
	405125	8247873	Plus	137113-137814
	405172	8966752	Plus	153027-153262

	405236	7249076	Minus	151699-151915
	405325	6094661	Minus	25818-26380
	405411	3451356	Minus	17503-17778,18021-18290
5	405495	8050952	Minus	72182-72373
	405552	1552506	Plus	45199-45647
	405601	5815493	Minus	147835-147935,149220-149299
	405685	4508129	Minus	37956-38097
	405777	7283187	Minus	104773-105051
	405856	7653009	Plus	101777-102043
10	405876	6758747	Plus	39694-40031
	405932	7767812	Minus	123525-123713
	405934	6758795	Plus	159913-160605
	406006	8247801	Minus	42640-42776
	406134	9163473	Plus	153291-153452
15	406189	7289992	Minus	22007-22234
	408422	9256411	Plus	163003-163311
	406516	7711422	Minus	128375-128449,128560-128784
	406538	7711478	Plus	35196-35367,38229-38476,40080-40216,43522-43840
	406554	7711566	Plus	106956-107121
20	406577	7711730	Plus	11377-11509

**TABLE 10:** shows genes, including expression sequence tags differentially expressed in taxol resistant prostate tumor xenografts as compared to taxol sensitive prostate tumor xenografts. The genes are indicated as either being upregulated or downregulated during the induction of taxol resistance in sequential passages of the grafts.

10

Pkey:

ExAccn:

UnigeneID:

Unigene Title:

Eos:

F00-F14:

Unique Eos probeset identifier number

Exemplar Accession number, Genbank accession number

Unigene number

Unigene gene title

Internal Eos name

passage number

15

Pkey

ExAccn

UnigeneID

UnigenTitle

Eos

Resp.F00

F00

F02

F02

F05

F05

F07

F09

F10

F11

F13

F14

20

117921

N51002

Hs.47170

Liprin A2

PM28UP

1

9

8

9

32

20

34

122

105

82

71

111

112971

T17185

Hs.4299

ESTs

CHA1down

290

281

267

335

270

284

150

157

83

89

49

75

126645

A1187942

Hs.61835

STEAP

PAA5 down

106

111

103

71

34

67

33

14

2

1

1

1

119018

N95796

Hs.179809

ESTs

PAB2 down

765

841

757

909

742

704

478

428

253

175

228

238

110844

N31952

Hs.167531

ESTs

PAV7 down

175

192

147

141

123

129

73

65

55

48

54

84

25

100654

HG2841-HT2989

Hs.75442

Albumin, A

PM01down

666

605

504

728

357

445

602

187

117

127

117

113

100655

HG2841-HT2970

Hs.75442

Albumin, A

PM02down

620

653

486

688

368

386

606

175

101

95

115

97

102076

U09579

Hs.252437

cyclin-dap

PM03down

101

94

143

190

105

107

88

40

34

31

46

22

102208

U22861

Hs.75442

albumin

PM04down

495

424

323

518

252

296

487

188

169

143

165

145

103739

AA075779

-

mitochondr

PM05down

75

190

606

230

378

106

218

88

69

192

69

99

30

107036

AA599690

Hs.15725

SBB148

PM06down

87

124

115

188

132

111

66

71

49

70

38

50

108242

AA062746

-

ESTs

PM07down

14

20

252

13

22

43

193

10

104

21

18

108282

AA065143

-

solute car

PM08down

27

54

178

73

108

37

53

24

14

53

15

34

108679

AA115963

-

beta-1-glo

PM09down

680

893

1292

656

869

389

1

74

118

662

359

409

108731

AA126313

Hs.107476

ATP synth

PM10down

10

19

185

25

60

1

32

3

7

14

1

1

35

110675

H89355

Hs.6598

adrenergic

PM11down

207

334

237

239

231

220

119

145

93

64

56

124

115412

AA283804

Hs.193552

ESTs

PM12down

146

316

282

271

340

334

115

238

100

196

83

207

115844

AA430124

Hs.234607

MDM2

PM13down

49

93

94

154

132

91

23

54

23

76

14

41

120588

AA281591

Hs.16193

ESTs

PM14down

80

157

58

141

159

127

39

83

35

37

16

46

40

132349

Y00705

Hs.181288

serine pro

PM15down

146

217

214

150

106

128

177

85

54

63

66

56

132888

AA490775

Hs.5920

N-acetylma

PM16down

92

150

132

178

126

139

53

94

48

67

41

80

132967

AA032221

Hs.61635

STEAP

PM17down

224

208

203

215

205

180

132

65

68

50

48

63

133063

AA283085

Hs.64065

ESTs

PM18down

85

148

161

150

92

108

42

99

42

65

29

126

134374

D62633

Hs.8236

ESTs

PM19down

230

240

194

212

231

189

89

123

107

95

68

91

45

135400

M23263

Hs.99915

androgen r

PM20down

36

167

99

178

132

101

23

71

26

122

14

44



**TABLE 11:** shows genes, including expression sequence tags that are up-regulated in prostate tumor tissue compared to normal prostate tissue as analyzed using Affymetrix/Eos Hu01 GeneChip array. Shown are the ratios of "average" normal prostate to "average" prostate cancer tissues.

5

Pkey: Unique Eos probeset identifier number ExAccn: Exemplar Accession number, Genbank accession number UnigenelD: Unigene number Unigene Title: Unigene gene title R1: Background subtracted normal prostate : prostate tumor tissue					
	Pkey	ExAccn	UnigenelD	Unigene Title	R1
10	101336	L49169	Hs.75678	FBJ murine osteosarcoma viral oncogene homolog B	0.012
	130642	M63438	Hs.156110	Immunoglobulin kappa variable 1D-8	0.015
	133512	X01677	Hs.195188	glyceraldehyde-3-phosphate dehydrogenase	0.017
	133436	H44631	Hs.737	immediate early protein	0.017
	129292	X13810	Hs.1101	POU domain; class 2; transcription factor 2	0.019
15	100610	HG2566-HT4792		Microtubule-Associated Protein Tau, Alt. Splice 3, Exon 8	0.02
	133448	M34516	Hs.170116	immunoglobulin lambda-like polypeptide 3	0.021
	125193	W67577	Hs.84298	CD74 antigen (invariant polypeptide of major histocompatibility complex; class II antigen-associated)	0.022
20	133456	T49257	Hs.183704	ubiquitin C	0.022
	134546	AA459310	Hs.8518	Homo sapiens mRNA; cDNA DKFZp586L1722 (from clone DKFZp586L1722)	0.023
	102131	U15085	Hs.1162	major histocompatibility complex; class II; DM beta	0.023
	101375	M13560	Hs.84298	CD74 antigen (invariant polypeptide of major histocompatibility complex; class II antigen-associated)	0.023
	100674	HG3033-HT3194		Spliceosomal Protein Sap 62	0.024
25	134365	R32377	Hs.82240	syntrophin 3A	0.027
	132335	D60387	Hs.189885	ESTs	0.027
	110303	H37801	Hs.32708	ESTs	0.028
	131678	N59162	Hs.30542	ESTs	0.028
	116599	D80046	Hs.250879	ESTs	0.029
30	133769	M17733	Hs.75968	thymosin; beta 4; X chromosome	0.029
	107904	AA026648	Hs.61389	ESTs	0.03
	129427	T80746	Hs.111334	ferritin; light polypeptide	0.03
	105987	AA06631	Hs.110299	mitogen-activated protein kinase kinase 7	0.03
	131466	F03233	Hs.27189	ESTs	0.032
35	102859	X00274	Hs.76807	Human HLA-DR alpha-chain mRNA	0.032
	134626	S82198	Hs.8709	caldesin (serum calcium decreasing factor; elastase IV)	0.032
	134170	M63138	Hs.79572	cathepsin D (lysosomal aspartyl protease)	0.033
	131713	X57809	Hs.181125	immunoglobulin lambda gene cluster	0.034
	100748	HG3517-HT3711		Alpha-1-Antitrypsin, 5' End	0.034
40	118769	N74496		ESTs	0.034
	111734	R25375	Hs.126916	ESTs	0.036
	109221	AA192755	Hs.85840	ESTs; Weakly similar to stac [H.sapiens]	0.036
	133846	AA480073	Hs.76719	U6 snRNA-associated Sm-like protein	0.036
	135281	AA401575	Hs.97757	ESTs	0.037
45	119073	R32894	Hs.45514	v-ets avian erythroblastosis virus E26 oncogene related	0.037
	100760	HG3576-HT3779		Major Histocompatibility Complex, Class II Beta W52	0.037
	101426	M19483	Hs.25	ATP synthase; H+ transporting; mitochondrial F1 complex; beta polypept	0.038
	129568	AA428025	Hs.114360	transforming growth factor beta-stimulated protein TSC-22	0.038
	130900	Z38468	Hs.21036	ESTs; Moderately similar to F25965_3 [H.sapiens]	0.039
50	133879	M13829	Hs.77183	v-raf murine sarcoma 3611 viral oncogene homolog 1	0.039
	100627	HG2702-HT2798		Serine/Threonine Kinase (Gb:Z25424)	0.039
	129424	M55593	Hs.111301	matrix metalloproteinase 2 (gelatinase A; 72kD gelatinase; 72kD type IV collagenase)	0.039
	128652	AA621245	Hs.103147	ESTs; Weakly similar to similar to SP:YR40_BACSU [C.elegans]	0.039
	129979	T72635	Hs.13956	ESTs	0.039
55	133468	X03068	Hs.73931	major histocompatibility complex; class II; DQ beta 1	0.04
	102636	U67092		Human ataxia-telangiectasia locus protein (ATM) gene, exons 1a, 1b, 2, 3 and 4, partial cds	0.04
	129536	M33493	Hs.184504	trypsin; alpha	0.04
60	133599	M64788	Hs.75151	RAP1; GTPase activating protein 1	0.041

5	102104	U12139		Human alpha1(XI) collagen (COL11A1) gene, 5' region and exon 1	0.041
	131340	AA478305	Hs.25817	Homo sapiens chromosome 19; cosmid R27218	0.041
	130446	X79510	Hs.155693	protein tyrosine phosphatase; non-receptor type 21	0.042
	101352	L77701	Hs.16297	COX17 (yeast) homolog; cytochrome c oxidase assembly protein	0.042
	122593	AA453310	Hs.128749	alpha-methylacyl-CoA racemase	0.042
10	130181	R39552	Hs.151608	Homo sapiens clone 23622 mRNA sequence	0.042
	134071	Z14093	Hs.78950	branched chain keto acid dehydrogenase E1; alpha polypeptide (maple syrup urine disease)	0.042
	108129	AA053252	Hs.185848	ESTs; Weakly similar to II ALU SUBFAMILY J WARNING ENTRY II [H.sapiens]	0.043
	130511	L32137	Hs.1584	cartilage oligomeric matrix protein (pseudoachondroplasia; epiphyseal dysplasia 1; multiple)	0.043
	133336	AA291456	Hs.71190	ESTs	0.043
15	132992	L02326	Hs.198118	immunoglobulin lambda-like polypeptide 2	0.044
	131880	AA047034	Hs.33818	RecQ protein-like 5	0.044
	130540	U35234	Hs.159534	protein tyrosine phosphatase; receptor type; 6	0.044
	133467	AA258595	Hs.73931	major histocompatibility complex; class II; DQ beta 1	0.044
	101191	L20688	Hs.83656	Rho GDP dissociation inhibitor (GDI) beta	0.044
20	101880	M95610	Hs.37165	collagen; type IX; alpha 2	0.044
	102799	U88898		Human endogenous retroviral H protease/integrase-derived ORF1 mRNA, complete cds, and putative envelope prot mRNA, partial cds	0.044
	107200	D20350	Hs.5628	ESTs	0.044
	101166	L14927	Hs.2099	lipocalin 1 (protein migrating faster than albumin; tear prealbumin)	0.044
	134289	M54915	Hs.81170	pim-1 oncogene	0.044
25	135329	AA436026	Hs.98858	ESTs	0.044
	124950	T03786	Hs.151531	protein phosphatase 3 (formerly 2B); catalytic subunit; beta isoform (calciueurin A beta)	0.044
	102919	X12447	Hs.183760	aldolase A; fructose-bisphosphate	0.044
	100574	HG2279-HT2375		Triosephosphate Isomerase	0.045
	131286	AA450092	Hs.25300	Homo sapiens clones 24718 and 24825 mRNA sequence	0.045
30	102675	U72512		Human B-cell receptor associated protein (hBAP) alternatively spliced mRNA, partial 3'UTR	0.045
	131332	R50487	Hs.25717	ESTs	0.045
	101634	M57731	Hs.75765	GRO2 oncogene	0.046
	113118	T47906	Hs.220512	ESTs	0.046
	124884	R77276	Hs.120911	ESTs	0.046
35	130523	W76097	Hs.214507	ESTs	0.046
	110244	H26742	Hs.25367	ESTs; Weakly similar to ALR [H.sapiens]	0.046
	131932	AA454980	Hs.25601	chromodomain helicase DNA binding protein 3	0.046
	132509	H09751	Hs.5038	neuropathy target esterase	0.046
	133372	AA291139	Hs.72242	ESTs	0.046
40	100817	HG4011-HT4804		Dystrophin-Associated Glycoprotein, 50 Kda, Alt. Splice 2	0.047
	106746	AA476436	Hs.7891	ESTs	0.047
	135401	L14813	Hs.169271	carboxyl ester lipase-like (bile salt-stimulated lipase-like)	0.047
	130479	R44163	Hs.12457	Homo sapiens clone 23770 mRNA sequence	0.047
	102589	U62015	Hs.8867	cysteine-rich; angiogenic inducer; 61	0.047
45	121521	AA412165	Hs.97358	EST	0.048
	135340	AA425137	Hs.99093	Homo sapiens chromosome 19; cosmid R26379	0.048
	132336	AA342422	Hs.45073	ESTs	0.048
	115368	AA282133	Hs.88960	ESTs; Weakly similar to similar to collagen [C.elegans]	0.048
	101278	L38487	Hs.110849	estrogen-related receptor alpha	0.048
50	103284	X80200	Hs.8375	TNF receptor-associated factor 4	0.048
	100584	HG2239-HT2324		Potassium Channel Protein.(Gb:Z11585)	0.048
	133132	Z40883	Hs.65588	ESTs; Weakly similar to dJ393P12.2 [H.sapiens]	0.048
	121811	AA424535	Hs.98416	ESTs	0.048
	129513	AA279481	Hs.238831	ESTs; Weakly similar to collagen alpha 1(XVII) chain [M.musculus]	0.049
55	132468	S78854	Hs.49322	deiodinase; iodothyronine; type III	0.049
	120111	W85841	Hs.136031	ESTs	0.049
	103668	Z83741	Hs.248174	H2A histone family; member M	0.049
	130386	F10874	Hs.234249	mitogen-activated protein kinase 8 interacting protein 1	0.049
	104275	C02170	Hs.39387	ESTs; Weakly smlr to weak smlrity to ribosomal prot L14 [C.elegans]	0.049
60	106305	AA436146	Hs.12828	ESTs	0.05
	116431	AA609878	Hs.55289	ESTs; Weakly smlr to 110 KD CELL MEMBRANE GLYCOPROTEIN [H.sapiens]	0.813
	120339	AA206465	Hs.256470	EST	0.05
	114427	AA017063		ESTs; Highly similar to Mlz-1 protein [H.sapiens]	0.05
	118821	N78070	Hs.94789	ESTs	0.05
65	118979	N93788	Hs.43666	protein tyrosine phosphatase type IVA; member 3	0.05
	107495	W78776	Hs.90375	ESTs	0.051
	120240	Z41732	Hs.66049	ESTs	0.051

5	114331	Z41309	Hs.12400	ESTs	0.051
	130947	R40037	Hs.21506	ESTs	0.052
	129242	W81679	Hs.5174	ribosomal protein S17	0.052
	131413	AA482390	Hs.26510	ESTs; Modly smlr to vacuolar prot sorting homolog r-vps33b [R.norvegicus]	0.052
	112304	R54798	Hs.26239	ESTs	0.052
10	101416	M17254	Hs.45514	v-ets avian erythroblastosis virus E26 oncogene related	0.052
	131201	AA426304	Hs.24174	ESTs	0.052
	101054	K02405	Hs.73933	Human MHC class II HLA-DQ-beta mRNA (DR7 DQw2); complete cds	0.052
	101306	L41143	Hs.232069	T-cell leukemia translocation altered gene	0.053
	129311	T55087		yb45c08.r1 Stratagene fetal spleen (#937205) Homo sapiens cDNA clone IMAGE:74126 5', mRNA sequence.	0.053
15	129942	U95301	Hs.144442	phospholipase A2; group X	0.053
	119210	R93340	Hs.92995	ESTs	0.053
	101046	K01160		Accession not listed in Genbank	0.053
	114086	Z38266	Hs.12770	Homo sapiens PAC clone DJ0777023 from 7p14-p15	0.053
	110171	H19964	Hs.31709	ESTs	0.053
20	101004	J04101	Hs.248109	v-ets avian erythroblastosis virus E26 oncogene homolog 1	0.053
	129715	N58479	Hs.12126	ESTs; Weakly similar to LR8 [H.sapiens]	0.053
	101581	M34896	Hs.198253	major histocompatibility complex, class II; DQ alpha 1	0.053
	113285	T66830	Hs.182712	ESTs	0.053
	127537	AA569531	Hs.162859	ESTs	0.054
25	100813	HG3995-HT4265		Cpg-Enriched Dna, Clone S19	0.054
	101841	M93107	Hs.76893	3-hydroxybutyrate dehydrogenase (heart; mitochondrial)	0.054
	135053	R77159	Hs.93678	ESTs	0.054
	101419	M17886	Hs.177592	ribosomal protein; large; P1	0.054
	119724	W69468	Hs.47622	ESTs	0.055
30	102673	U72509		Human alternatively spliced B8 (B7) mRNA, partial sequence	0.055
	129877	AA248589	Hs.13094	ESTs; Weakly similar to ORF YGR101w [S.cerevisiae]	0.055
	114788	AA156737	Hs.103904	EST	0.055
	123812	AA620607	Hs.111591	ESTs	0.055
	117669	N39237	Hs.44977	ESTs	0.055
35	123782	AA610111	Hs.162695	EST	0.055
	102395	U41767	Hs.92208	a disintegrin and metalloproteinase domain 15 (metargidin)	0.055
	133795	M12529	Hs.169401	apolipoprotein E	0.055
	123193	AA489228	Hs.136956	ESTs	0.056
	132595	AA253369	Hs.155742	glyoxylate reductase/hydroxypyruvate reductase	0.056
40	104161	AA456471	Hs.7724	KIAA0963 protein	0.056
	115330	AA281145	Hs.88827	ESTs	0.056
	112893	T08000	Hs.194684	bassoon (presynaptic cytomatrix protein)	0.056
	133475	L29217	Hs.73987	CDC-like kinase 3	0.056
	128699	K03207	Hs.103972	proline-rich protein BstNI subfamily 4	0.056
45	102940	X13956	Hs.24998	Hu 12S RNA induced by poly(rI); poly(rC) and Newcastle disease virus	0.056
	131299	AA431484	Hs.25426	ESTs; Weakly similar to unknown [H.sapiens]	0.057
	102495	U51240	Hs.79356	Lysosomal-associated multispanning membrane protein-5	0.057
	129594	R70379	Hs.115396	Human germline IgD chain gene; C-region; C-delta-1 domain	0.057
	118593	N69020	Hs.207689	EST	0.057
50	126702	U54602	Hs.2785	keratin 17	0.057
	124386	N27368	Hs.212414	sema domain; immunoglobulin domain (Ig); short basic domain; secreted; (semaphorin) 3E	0.057
	130538	M20786	Hs.159509	alpha-2-plasmin inhibitor	0.057
	114299	Z40782	Hs.22920	similar to S68401 (cattle) glucose induced gene	0.057
	115604	AA400378	Hs.49391	ESTs	0.057
55	106052	AA416947	Hs.6382	ESTs; Highly similar to KIAA0612 protein [H.sapiens]	0.057
	131730	U05681	Hs.31210	B-cell CLL/lymphoma 3	0.057
	131285	AA479498	Hs.25274	ESTs; Modly smlr to putative seven pass transmembrane prot [H.sapiens]	0.058
	129705	X78706	Hs.12068	canine acetyltransferase	0.058
	123175	AA489010	Hs.178400	ESTs	0.058
60	103592	Z30844	Hs.123059	chloride channel Kb	0.058
	118198	N59478	Hs.48398	ESTs; Moderately similar to tumor necrosis factor-alpha	0.058
	104886	AA053348	Hs.144626	-Induced protein B12 [H.sapiens]	0.058
	104250	AF000575	Hs.105928	growth differentiation factor 11	0.058
				leukocyte immunoglobulin-like receptor; subfamily B (with TM and ITIM domains); member 3	0.058
65	113301	T67452	Hs.13104	EST	0.058
	110441	H50302	Hs.19845	ESTs; Highly smlr to prot phosphatase 2A BR gamma subunit [H.sapiens]	0.058
	125297	Z39215	Hs.159409	ESTs	0.058
	135258	AA292423	Hs.97272	ESTs; Weakly similar to dJ281H8.2 [H.sapiens]	0.058
	130633	T92363	Hs.178703	ESTs	0.058
	112006	R42607	Hs.22241	hypothetical protein	0.058

5	130805	U12184	Hs.170238	sodium channel; voltage-gated; type I; beta polypeptide	0.058
	134907	D80002	Hs.178292	KIAA0180 protein	0.058
	132619	AA404565	Hs.53447	ESTs; Moderately similar to kinesin light chain 1 [M.musculus]	0.058
	135115	N35489	Hs.94853	neurochondrin	0.058
	100531	HG1872-HT1907		Major Histocompatibility Complex, Dg	0.058
10	124530	N62256	Hs.102727	EST	0.058
	119960	W87533	Hs.32699	ESTs; Moderately similar to LIV-1 protein [H.sapiens]	0.058
	132793	AA478999	Hs.56966	KIAA0906 protein	0.058
	101076	L04270	Hs.1116	lymphotoxin beta receptor (TNFR superfamily; member 3)	0.058
	130655	N92934	Hs.17409	cysteine-rich protein 1 (intestinal)	0.058
15	134458	AA182614	Hs.83577	cysteine and glycine-rich protein 3 (cardiac LIM protein)	0.058
	105904	AA401452	Hs.32060	ESTs	0.059
	132878	AA026793	Hs.58679	ESTs; Weakly similar to 4F2/CD98 light chain [M.musculus]	0.059
	121828	AA425166	Hs.98487	ESTs	0.059
	133418	U76366	Hs.172727	Treacher Collins-Franceschetti syndrome 1	0.059
20	129317	N48244	Hs.110373	ESTs	0.059
	130153	D85815	Hs.15114	ras homolog gene family; member D	0.059
	124403	N31745	Hs.102493	ESTs	0.059
	127683	AA668123	Hs.134170	ESTs	0.059
	129814	W20070	Hs.168625	KIAA0979 protein	0.059
25	131770	D59682	Hs.31833	ESTs	0.06
	117557	N33920	Hs.44532	diubiquitin	0.06
	103522	Y10514		H.sapiens mRNA for CD152 protein	0.06
	120029	W91960	Hs.250640	sequence-specific single-stranded-DNA-binding protein	0.06
	102135	U15460	Hs.41691	activating transcription factor B	0.06
30	123617	AA609183	Hs.181131	ESTs	0.06
	112136	R46100	Hs.9739	ESTs	0.061
	133725	V00563	Hs.179543	immunoglobulin mu	0.061
	102069	U09196	Hs.82520	Hu 1.1 kb mRNA upregulated in retinoic acid treated HL-60 neutrophilic cells	0.061
	106555	AA455000	Hs.16725	ESTs	0.061
35	123269	AA491226	Hs.105280	ESTs; Weakly similar to dJ963K23.2 [H.sapiens]	0.061
	109088	AA166837	Hs.72620	DKFZP434I14 protein	0.061
	129399	AA263028	Hs.111076	malate dehydrogenase 2; NAD (mitochondrial)	0.061
	129375	W79850	Hs.11081	ESTs; Weakly similar to HPBRII-7 protein [H.sapiens]	0.061
	135271	AA397763	Hs.97562	ESTs	0.061
40	132958	W90398	Hs.6147	KIAA1075 protein	0.061
	129364	AA477106	Hs.110757	DNA segment on chromosome 21 (unique) 2056 expressed sequence	0.061
	123427	AA598548	Hs.112471	ESTs	0.061
	105236	AA219179	Hs.19105	translocase of inner mitochondrial membrane 17 (yeast) homolog B	0.061
	101012	J04444	Hs.697	cytochrome c-1	0.062
45	134791	L18983	Hs.89855	protein tyrosine phosphatase; receptor type; N	0.062
	133700	K01396	Hs.75621	protease inhibitor 1 (anti-elastase); alpha-1-antitrypsin	0.062
	123887	AA621065	Hs.112943	ESTs	0.062
	129363	H05704	Hs.110748	H sapiens HCR (a-helix coiled-coil rod homologue) mRNA; complete cds	0.062
	105719	AA291644	Hs.36793	ESTs	0.062
50	124226	H62396	Hs.190266	ESTs	0.062
	117437	N27645		yw5e3.s1 Weizmann Olfactory Epithelium H sapiens cDNA clone	0.062
	132741	AA394133	Hs.55898	IMAGE255676 3' smir to contains L1.13 L1 repetitive element ;, mRNA seq	0.062
	134437	M26041	Hs.188253	ESTs; Highly similar to OASIS protein [M.musculus]	0.062
	107664	AA010594	Hs.5326	major histocompatibility complex; class II; DQ alpha 1	0.062
55	120844	AA349417	Hs.96917	ESTs; Moderately similar to pim-1 protein [H.sapiens]	0.062
	101574	M34182	Hs.158029	ESTs	0.062
	131219	C00476	Hs.24395	protein kinase; cAMP-dependent; catalytic; gamma	0.062
	103495	Y09022	Hs.153591	small inducible cytokine subfamily B (Cys-X-Cys); member 14 (BRAK)	0.062
	129607	AA404594	Hs.111607	Not56 (D. melanogaster)-like protein	0.062
60	106467	AA450040	Hs.154162	ESTs	0.062
	128841	T16358	Hs.106443	ADP-ribosylation factor-like 2	0.062
	100515	HG1723-HT1729		ESTs	0.062
	119332	T64095		Macrophage Scavenger Receptor, Alt. Splice 2	0.062
	134516	AA171939	Hs.23413	ESTs; Weakly similar to II ALU SUBFAMILY J WARNING ENTRY II [H.sapiens]	0.062
65	135012	X73608	Hs.93029	ESTs	0.062
	103575	Z26256		spard/osteonectin; cwcv and kazal-like domains proteoglycan (testican)	0.063
	115514	AA297739	Hs.55609	H.sapiens isoform 1 gene for L-type calcium channel, exon 1	0.063
	103996	AA321355		ESTs; Weakly similar to ISOLEUCYL-TRNA SYNTHETASE;	0.063
	110505	H55992	Hs.20495	CYTOPLASMIC [H.sapiens]	0.063
	133912	X62744	Hs.77522	EST2393 Bone marrow Homo sapiens cDNA 5' end, mRNA sequence	0.063
	125581	M33600	Hs.180255	DKFZP434F011 protein	0.063
				major histocompatibility complex; class II; DM alpha	0.063
				major histocompatibility complex; class II; DR beta 1	0.063

5	130139	R38280	Hs.150922	BCS1 (yeast homolog)-like	0.064
	105817	AA397825	Hs.5307	synaptopodin	0.064
	134858	AA410617	Hs.178009	ESTs	0.064
	100306	D50495	Hs.80598	transcription elongation factor A (SII); 2	0.064
	100277	D42053	Hs.75890	site-1 protease (subtilisin-like; sterol-regulated; cleaves sterol regulatory element binding proteins)	0.064
10	133116	D81259	Hs.6529	ESTs	0.064
	134909	AA521488	Hs.90998	KIAA0128 protein	0.064
	130319	X74794	Hs.154443	minichromosome maintenance deficient (S. cerevisiae) 4	0.064
	132057	AA102489	Hs.173484	ESTs	0.064
	108334	AA070473		zm7c8.s1 Stratagene neuroepithelium (#937231) Homo sapiens cDNA clone IMAGE:5399 3', mRNA sequence	0.064
15	129783	F10815	Hs.12373	KIAA0422 protein	0.064
	135112	T67464	Hs.94617	ESTs; Weakly similar to predicted using Genefinder [C.elegans]	0.064
	122269	AA436856	Hs.98910	ESTs	0.064
	133082	AA457129	Hs.8455	RuvB (E coll homolog)-like 2	0.064
	113213	T58607		ya94a02.s1 Stratagene placenta (#937225) Homo sapiens cDNA clone IMAGE:69290 3', mRNA sequence.	0.065
20	106228	AA429290	Hs.17719	ESTs	0.065
	130182	Y12661	Hs.171014	VGF nerve growth factor inducible	0.065
	104894	AA054087	Hs.18858	phospholipase A2; group IVC (cytosolic; calcium-independent)	0.065
	103508	Y10141		H.sapiens DAT1 gene, partial, VNTR	0.065
	128474	U40671	Hs.100298	ligase III; DNA; ATP-dependant	0.065
25	134012	AA417821	Hs.237924	ESTs; Highly similar to CGI-69 protein [H.sapiens]	0.065
	134536	AA457735	Hs.850	IMP (inosine monophosphate) dehydrogenase 1	0.065
	111714	R23146	Hs.23466	ESTs	0.065
	110521	H57060	Hs.108268	ESTs	0.065
	103282	X80198	Hs.77628	steroidogenic acute regulatory protein related	0.065
30	113921	W80730	Hs.28355	ESTs	0.065
	129331	N93465	Hs.110453	ESTs; Highly similar to CGI-38 protein [H.sapiens]	0.065
	111316	N74597	Hs.180535	ESTs; Weakly similar to mitogen inducible gene mig-2 [H.sapiens]	0.065
	135138	AA036794	Hs.95196	ESTs; Weakly similar to T20B12.3 [C.elegans]	0.065
	107289	T10792	Hs.172098	ESTs	0.065
35	121405	AA406083	Hs.98007	ESTs	0.065
	124955	T16275	Hs.106359	ESTs	0.065
	106595	AA456933	Hs.174481	ESTs	0.066
	100106	AF015910		Homo sapiens unknown protein mRNA, partial cds	0.066
	134715	AA282757	Hs.89040	prepronociceptin	0.066
40	135367	AA480109	Hs.9963	TYRO protein tyrosine kinase binding protein	0.066
	111533	R08548	Hs.251651	EST	0.066
	128509	R53109	Hs.247382	dimethylarginine dimethylaminohydrolase 2	0.066
	101030	J05037	Hs.76751	serine dehydratase	0.066
	102753	U80226		Human gamma-aminobutyric acid transaminase mRNA, partial cds	0.067
45	126991	R31652	Hs.821	biglycan	0.067
	109583	F02322	Hs.26135	ESTs	0.067
	119241	T12559	Hs.221382	ESTs	0.067
	130569	AA156597	Hs.256441	EST; Moderately similar to CGI-136 protein [H.sapiens]	0.067
	112926	T10316	Hs.4302	ESTs	0.067
50	120495	AA256073	Hs.190626	ESTs	0.067
	130931	AA278412	Hs.21348	ESTs; Weakly similar to F42C5.7 gene product [C.elegans]	0.067
	129982	M87789	Hs.140	immunoglobulin gamma 3 (Gm marker)	0.067
	133832	H03387	Hs.241305	estrogen-responsive B box protein	0.067
	110697	H93721	Hs.20798	ESTs	0.067
55	121183	AA400138	Hs.97703	ESTs	0.067
	130953	U12707	Hs.2157	Wiskott-Aldrich syndrome (eczema-thrombocytopenia)	0.067
	102218	U24183	Hs.75160	phosphofructokinase; muscle	0.067
	114181	Z39079	Hs.8021	KIAA1058 protein	0.067
	116581	D51287	Hs.82148	ribosomal protein S12	0.067
60	132498	T87708	Hs.50098	ESTs	0.068
	103788	AA096814	Hs.9527	ESTs; Highly similar to HSPC013 [H.sapiens]	0.068
	102459	U48936		Human amiloride-sensitive epithelial sodium channel gamma subunit mRNA, 5' end, partial cds	0.068
	100373	D79999	Hs.77225	ADP-ribosyltransferase (NAD+; poly (ADP-ribose) polymerase)-like 1	0.068
	132717	AA203321	Hs.151698	DKFZP727G051 protein	0.068
65	128863	D87462	Hs.106674	BRCA1 associated protein-1 (ubiquitin carboxy-terminal hydrolase)	0.068
	115193	AA262029	Hs.88218	ESTs	0.068
	124558	N68046	Hs.141605	ESTs	0.069
	117225	N20392	Hs.42846	ESTs	0.069
	110665	H83380	Hs.32757	ESTs	0.069

5	132805	U70663	Hs.182965	Kruppel-like factor 4 (gut)	0.069
	105778	AA348910	Hs.153299	DOM-3 (C. elegans) homolog Z	0.069
	134770	R72079	Hs.89575	CD78B antigen (immunoglobulin-associated beta)	0.069
	123097	AA485869	Hs.105671	ESTs	0.069
	100750	HG3523-HT4899		Proto-Oncogene C-Myc, Alt. Splice 3, Orf 114	0.069
10	125091	T91518		ye20105.s1 Stratagene lung (#937210) H sapiens cDNA clone IMAGE: 3' similar to contains Alu repetitive element; contains MER12 repetitive element; mRNA sequence.	0.069
	100756	HG3565-HT3768		Zinc Finger Protein (Gb:M88357)	0.069
	113483	T87768	Hs.18439	ESTs	0.069
	101119	L09708	Hs.2253	complement component 2	0.069
	102286	U31628	Hs.12503	interleukin 15 receptor; alpha	0.07
15	135349	D83174	Hs.9930	collagen-binding protein 2 (collagen 2)	0.07
	100991	J03764	Hs.82085	plasminogen activator inhibitor; type 1	0.07
	133675	AA443720	Hs.7551	ESTs; Weakly similar to T25G3.1 [C.elegans]	0.07
	105422	AA251014	Hs.12210	ESTs	0.07
	102832	X13334	Hs.75627	CD14 antigen	0.07
20	119147	R58878	Hs.65739	ESTs	0.07
	104900	AA055048	Hs.180481	ESTs; Weakly similar to ACROSIN PRECURSOR [H.sapiens]	0.07
	133185	AA481404	Hs.6686	ESTs	0.07
	115496	AA290674	Hs.71819	eukaryotic translation initiation factor 4E binding protein 1	0.07
	121005	AA398332	Hs.97613	ESTs	0.07
25	124869	R69088	Hs.28728	ESTs; Weakly similar to F55A12.9 [C.elegans]	0.071
	129154	N23673	Hs.108969	mannosidase; alpha; class 2B; member 1	0.071
	112161	R48295		ESTs; Wkly smlr to II ALU SUBFAMILY J WARNING ENTRY II [H.sapiens]	0.071
	125251	W87486	Hs.141464	ESTs	0.071
	134298	J00116	Hs.81343	collagen; type II; alpha 1 (primary osteoarthritis; spondyloepiphyseal dysplasia; congenital)	0.071
30	119745	W70264	Hs.58093	ESTs	0.071
	131306	AA232686	Hs.25489	ESTs	0.071
	107776	AA018820	Hs.221147	ESTs	0.071
	134271	AA199630	Hs.184456	ESTs; Wkly smlr to II ALU SUBFAMILY SX WARNING ENTRY II [H.sapiens]	0.071
	101798	M85220		Accession not listed in Genbank	0.071
35	135402	S76942	Hs.99922	dopamine receptor D4	0.071
	118742	N74052	Hs.50424	EST	0.071
	131867	M64556	Hs.3353	Homo sapiens clone 24940 mRNA sequence	0.071
	102823	X12517	Hs.1063	small nuclear ribonucleoprotein polypeptide C	0.072
	100775	HG371-HT26388		Mucin 1, Epithelial, Alt. Splice 9	0.072
40	111020	N54361	Hs.185726	ESTs	0.072
	134224	X80822	Hs.163593	ribosomal protein L18a	0.072
	124059	F13673	Hs.99769	ESTs	0.072
	133972	AA160743	Hs.78019	Homo sapiens clone 24432 mRNA sequence	0.072
	128681	AA346009	Hs.178186	ESTs; Weakly similar to WASP-family protein [H.sapiens]	0.072
45	103065	X58399	Hs.81221	Human L2-8 transcript of unrearranged immunoglobulin V(H)5 pseudogene	0.072
	124966	T19271	Hs.155560	calnexin	0.072
	112270	R53021	Hs.203358	ESTs	0.072
	118704	F10183	Hs.66140	EST	0.072
	129890	M13699	Hs.111481	ceruloplasmin (ferroxidase)	0.072
50	127345	AA972008	Hs.166253	ESTs; Highly similar to KIAA0478 protein [H.sapiens]	0.072
	112436	R63090	Hs.28391	ESTs	0.072
	114531	AA053033	Hs.203330	ESTs	0.072
	135122	H99080	Hs.94814	ESTs	0.072
	103834	AA281338	Hs.134200	Homo sapiens mRNA; cDNA DKFZp564C186 (from clone DKFZp564C186)	0.072
55	109363	AA215369	Hs.185764	ESTs; Weakly similar to hypothetical protein [H.sapiens]	0.072
	112647	R83329	Hs.33403	ESTs	0.073
	127083	Z44079	Hs.91608	otoferrin	0.073
	133027	AA402624	Hs.63236	synuclein; gamma (breast cancer-specific protein 1)	0.073
	122086	AA432121	Hs.250986	EST	0.073
60	110405	H47542	Hs.33962	ESTs	0.073
	128697	AB002344	Hs.103915	KIAA0346 protein	0.073
	112221	R50380	Hs.25670	ESTs	0.073
	100478	HG1067-HT1067		Mucin (Gb:M22406)	0.073
	115598	AA400129	Hs.65735	ESTs	0.073
65	132491	AA227137	Hs.4984	KIAA0828 protein	0.073
	101655	M60299		Human alpha-1 collagen type II gene, exons 1, 2 and 3	0.073
	106018	AA411837	Hs.34737	ESTs	0.073
	129683	W05348	Hs.158196	DKFZP434B103 protein	0.073
	134137	F10045	Hs.79347	KIAA0211 gene product	0.073
	114008	W89128	Hs.19872	ESTs	0.073

5	107653	AA010210	Hs.47041	ESTs	0.073
	104798	AA029462	Hs.17235	ESTs	0.073
	134082	L16991	Hs.79006	deoxythymidylate kinase	0.073
	119180	R80413	Hs.82520	ESTs	0.073
	107741	AA016982	Hs.64341	ESTs	0.073
10	133683	AA335223	Hs.75558	pepsinogen 5; group I (pepsinogen A)	0.073
	111694	R22035	Hs.23331	ESTs	0.073
	120764	AA338729	Hs.133086	ESTs	0.073
	119389	T88826	Hs.90973	ESTs	0.074
	100929	HG688-HT688		Major Histocompatibility Complex, Class II, Dr Beta 2 (Gb:X65561)	0.074
15	119388	T88798		plasminogen activator inhibitor; type I	0.074
	133018	AF009874	Hs.184434	axin	0.074
	105185	AA191495	Hs.189937	ESTs	0.074
	133413	S72043	Hs.73133	metallothionein 3 (growth inhibitory factor (neurotrophic))	0.074
	101017	J04599	Hs.821	biglycan	0.074
20	132865	K02765	Hs.251972	complement component 3	0.074
	110882	N36001	Hs.17348	ESTs; Wkly smlr to II ALU SUBFAMILY SQ WARNING ENTRY II [H.sapiens]	0.074
	129197	T93033	Hs.109308	ESTs; Wkly smlr to leucine-rich glioma-inactivated prot precursor [H.sapiens]	0.074
	101184	L19871	Hs.460	activating transcription factor 3	0.075
	134910	AA431320	Hs.9100	ESTs	0.075
25	119411	T96621	Hs.203656	EST	0.075
	102000	U01824	Hs.380	solute carrier family 1 (glial high affinity glutamate transporter); member 2	0.075
	114591	AA121893	Hs.103779	ESTs; Weakly similar to envelope protein [H.sapiens]	0.075
	134179	U53204	Hs.79706	plectin 1; intermediate filament binding protein; 500kD	0.075
	134503	U34880	Hs.84183	diphtheria toxin resistance protein required for diphthamide biosynthesis (Saccharomyces)-like 1	0.075
30	129719	N68396	Hs.167766	ESTs; Moderately similar to Pro-a2(XI) [H.sapiens]	0.075
	113916	W80464	Hs.31928	ESTs; Wkly smlr to alternatively spliced product using exon 13A [H.sapiens]	0.075
	113897	W73926	Hs.4947	ESTs	0.075
	129697	R00841	Hs.172069	DKFZP434C212 protein	0.075
	112078	R44155	Hs.112218	ESTs	0.075
35	121980	AA429886	Hs.110407	ESTs; Weakly similar to coded for by C. elegans cDNA yk173c12.5 [C.elegans]	0.075
	100898	HG4638-HT5050		Spliceosomal Protein Sap 49	0.075
	121626	AA416974	Hs.98174	ESTs	0.075
	133670	AA243416	Hs.75470	hypothetical protein; expressed in osteoblast	0.075
	131879	AA017161	Hs.33792	ESTs	0.075
40	100254	D38037	Hs.77643	FK506-binding protein 1B (12.6 kD)	0.075
	133194	AA291728	Hs.67201	ESTs	0.075
	106081	AA418394	Hs.25354	ESTs	0.075
	115544	AA351433	Hs.86187	Homo sapiens clone 23700 mRNA sequence	0.076
	119955	W87460	Hs.58989	ESTs	0.076
45	104407	H81361	Hs.102171	immunoglobulin superfamily containing leucine-rich repeat	0.076
	135018	X58431	Hs.98428	Human Hox2.2 gene for a homeobox protein	0.076
	114815	AA161488	Hs.103931	DKFZP434B0335 protein	0.076
	119471	W31352	Hs.55445	ESTs	0.076
	117788	N48292	Hs.46849	ESTs	0.076
50	119406	T95064	Hs.193771	EST	0.076
	130777	R61742	Hs.256554	ESTs	0.076
	130494	L13197	Hs.75874	pregnancy-associated plasma protein A	0.076
	104107	AA424111	Hs.12598	T-cell lymphoma invasion and metastasis 2	0.076
	121483	AA411981	Hs.25274	ESTs; Modly smlr to putative seven pass transmembrane prot [H.sapiens]	0.076
55	104451	M13299	Hs.102119	blue cone pigment	0.076
	118027	N52770	Hs.75988	thymosin; beta 4; X chromosome	0.076
	109419	AA227560	Hs.86987	receptor-interacting serine-threonine kinase 3	0.076
	115783	AA424487	Hs.72289	ESTs; Weakly similar to LIV-1 protein [H.sapiens]	0.076
	110585	H62223	Hs.133526	ESTs; Wkly smlr to II ALU SUBFAMILY SB1 WARNING ENTRY III [H.sapiens]	0.076
60	123165	AA488863	Hs.105216	ESTs; Weakly smlr to II ALU SUBFAMILY J WARNING ENTRY II [H.sapiens]	0.077
	103966	AA303166	Hs.127270	ESTs	0.077
	109549	F01528	Hs.21192	Homo sapiens clone 25155 mRNA sequence	0.077
	106730	AA465520	Hs.22313	ESTs	0.077
	120310	AA193676	Hs.118926	DKFZP586K0919 protein	0.077
65	104078	AA402801	Hs.222010	ESTs	0.077
	117624	N35978	Hs.82364	ESTs	0.077
	112421	R62441	Hs.23127	ESTs	0.077
	106958	AA497026	Hs.22059	ESTs	0.077
	128984	W92811	Hs.183927	ESTs; Weakly similar to II ALU SUBFAMILY J WARNING ENTRY II [H.sapiens]	0.077
	122044	AA431456	Hs.98738	EST	0.077
	123280	AA491285	Hs.175144	ESTs	0.077
	115710	AA412535	Hs.55235	sphingomyelin phosphodiesterase 2; neutra	0.077

				I membrane (neutral sphingomyelinase)	0.077
				KIAA0255 gene product	0.077
				Homo sapiens clone 643 unknown mRNA; complete sequence	0.078
				ESTs	0.078
5	134129	D87444	Hs.79305	Interferon; gamma-inducible protein 30	0.078
	129321	AA224502	Hs.206501	ESTs	0.078
	130513	AA480257	Hs.15886	KIAA0296 gene product	0.078
	100996	J03909	Hs.14623	ESTs	0.078
	128358	A1095718	Hs.135015	ESTs; Moderately similar to KIAA0544 protein [H.sapiens]	0.078
	128544	R59352	Hs.119273	glycine receptor; beta	0.078
10	106040	AA412681	Hs.125139	ESTs	0.078
	106495	AA452113	Hs.32454	ESTs	0.078
	131833	R40899	Hs.32973	even-skipped homeo box 1 (homolog of Drosophila)	0.078
	119219	R97176	Hs.110783	ESTs; Weakly similar to sphingosine kinase [M.musculus]	0.078
	135415	X80855	Hs.99967	ESTs	0.078
	109457	AA232646	Hs.68061	ESTs	0.078
15	117137	H86670	Hs.42221	ESTs	0.078
	107094	AA609614	Hs.5241	EST	0.078
	130165	T90529	Hs.251613	EST; Weakly similar to hypothetical protein [H.sapiens]	0.078
	124072	H05252	Hs.101637	ESTs	0.078
	126151	AA324743	Hs.40808	ESTs	0.078
20	119035	R01779	Hs.7740	ESTs	0.078
	110157	H18987	Hs.169731	ESTs	0.078
	128515	AA149044	Hs.10086	ESTs; Highly similar to HYPOTHETICAL PROTEIN KIAA0195 [H.sapiens]	0.078
	133069	U84836	Hs.6430	protein with polyglutamine repeat	0.078
	112209	R49644	Hs.24865	ESTs	0.078
25	133361	T82279	Hs.71848	Human clone 23548 mRNA sequence	0.078
	134714	U89322	Hs.890	lymphotoxin beta (TNF superfamily; member 3)	0.078
	129805	T86796	Hs.132875	ESTs; Weakly similar to predicted using Genefinder [C.elegans]	0.079
	120421	AA236166	Hs.132957	ESTs; Weakly similar to chondromodulin-1 precursor [H.sapiens]	0.079
	100885	HG4490-HT4876		Proline-Rich Protein Prb4, Allele	0.079
30	102789	U86759	Hs.158336	netrin 2 (chicken)-like	0.079
	120139	Z39273	Hs.77876	Human DNA from chromosome 19-specific cosmid R30923; genomic sequence	0.079
	135238	U76343	Hs.96970	Human liver GABA transport protein mRNA; 3' end	0.079
	129618	N54845	Hs.173030	ESTs	0.079
	132960	AA609742	Hs.6150	KIAA0521 protein	0.079
35	108751	AA127063	Hs.203717	ESTs	0.079
	134060	D42039	Hs.78871	KIAA0081 protein	0.079
	111338	N79778	Hs.35094	extracellular matrix protein 2; female organ and adipocyte specific	0.079
	112345	R56880	Hs.26563	ESTs	0.079
	126456	W00881		za56d02.r1 Soares fetal liver spleen 1NFLS Homo sapiens cDNA clone IMAGE:296547 5', mRNA sequence.	0.079
40	128937	Z39939	Hs.10726	ESTs	0.079
	103485	Y08409	Hs.248415	thyroid hormone responsive SPOT14 (rat) homolog	0.079
	111202	N68280	Hs.107822	ESTs	0.079
	132625	AA429890	Hs.166066	cisplatin resistance associated	0.079
45	103434	X88085	Hs.54433	tenascin R (restrictin; janusin)	0.079
	102616	U65581	Hs.159191	ribosomal protein L3-like	0.079
	102667	U70867	Hs.83974	solute carrier family 21 (prostaglandin transporter); member 2	0.079
	111422	R01127	Hs.19104	ESTs	0.079
	101411	M16938	Hs.820	homeo box C6	0.08
50	113267	T65058	Hs.12725	ESTs; Weakly similar to II ALU SUBFAMILY J WARNING ENTRY II [H.sapiens]	0.08
	103559	Z19585	Hs.75774	thrombospondin 4	0.08
	131588	AA258613	Hs.29189	KIAA1021 protein	0.08
	107821	AA020991	Hs.172856	ESTs	0.08
	134278	H82839	Hs.81001	ESTs; Weakly similar to DY3.6 [C.elegans]	0.08
55	120893	AA369800	Hs.97058	EST; Highly similar to CMP-N-acetylneuraminic acid hydroxylase [H.sapiens]	0.08
	108786	AA128999		zo8f12.s1 Stratagene neuroepithelium NT2RAM1 937234 Homo sapiens cDNA clone IMAGE:567119 3', mRNA sequence	0.08
	106890	AA489245	Hs.88500	KIAA1066 protein; JSAP1 homolog (mouse); JIP3 homolog (mouse)	0.08
	119760	W72267	Hs.58219	ESTs	0.08
60	132999	Y00787	Hs.624	Interleukin 8	0.08
	129156	AA028195	Hs.108973	dolichyl-phosphate mannosyltransferase polypeptide 2; regulatory subunit	0.08
	121171	AA400008	Hs.161814	ESTs	0.08
	103864	AA207264	Hs.181077	ESTs; Weakly similar to Miller-Dieker lissencephaly gene [H.sapiens]	0.08
	128591	AA255537	Hs.102057	ESTs; Weakly similar to O-linked GlcNAc transferase [H.sapiens]	0.08
65	122172	AA435753	Hs.161854	EST	0.08
	112802	R97647	Hs.174855	EST	0.08
	107723	AA015967	Hs.60680	EST	0.08
	113011	T23737	Hs.1600	chaperonin containing TCP1; subunit 5 (epsilon)	0.081
	131279	AA089853	Hs.25197	STIP1 homology and U-Box containing protein 1	0.081
	103180	X70083	Hs.58414	filamin C; gamma (actin-binding protein-280)	0.081



	103956	AA292411	Hs.233348	ESTs	0.081
	112706	R89828	Hs.138493	ESTs	0.081
	126126	M85370		EST01884 Fetal brain, Stratagene (cat#936206) Homo sapiens cDNA clone HFBC10, mRNA sequence.	0.081
5	130094	H43286	Hs.167017	gamma-aminobutyric acid (GABA) B receptor; 1	0.081
	100800	HG3945-HT4215		Phospholipid Transfer Protein	0.081
	108675	AA115240	Hs.61816	ESTs	0.081
	129420	AA234259	Hs.99816	ESTs	0.081
10	129666	M77349	Hs.118787	transforming growth factor; beta-induced; 68kD	0.081
	101645	M59807	Hs.943	natural killer cell transcript 4	0.081
	130536	T17045	Hs.159492	spastic ataxia of Charlevoix-Saguenay (sacsin)	0.081
	107732	AA016181	Hs.59752	ESTs	0.081
	123071	AA482593	Hs.104285	ESTs	0.081
	113537	T80457	Hs.191293	ESTs	0.081
15	101250	L34060	Hs.79133	cadherin 8	0.081
	122521	AA449433	Hs.149227	ESTs; Weakly similar to PROLINE-RICH PROTEIN MP-3 [M.musculus]	0.081
	133914	N32811	Hs.77542	ESTs	0.081
	102038	U05659	Hs.477	hydroxysteroid (17-beta) dehydrogenase 3	0.081
20	110336	H40338	Hs.174094	ESTs; Weakly similar to !! ALU SUBFAMILY J WARNING ENTRY !! [H.sapiens]	0.081
	118637	N70274	Hs.49822	ESTs	0.081
	117966	N51589	Hs.94012	ESTs	0.082
	104424	H87671	Hs.182320	ESTs; Weakly similar to Mouse 19.5 mRNA; complete cds [M.musculus]	0.082
	100381	D78361	Hs.125078	Human mRNA for ornithine decarboxylase antizyme; ORF 1 and ORF 2	0.082
25	112974	T17291	Hs.101174	microtubule-associated protein tau	0.082
	132832	D63482	Hs.57734	KIAA0148 gene product	0.082
	132039	Z39489	Hs.3781	Homo sapiens BAC clone RG118D07 from 7q31	0.082
	113272	T65383	Hs.12807	ESTs	0.082
	104924	AA058532	Hs.28774	ESTs	0.082
30	111061	N58054	Hs.36859	ESTs	0.082
	129269	R45977	Hs.163593	ribosomal protein L18a	0.082
	102453	U48437	Hs.74565	amyloid beta (A4) precursor-like protein 1	0.082
	126204	AI080388	Hs.134296	ESTs	0.082
	116615	D80666	Hs.45203	ESTs	0.082
35	128856	AA219552	Hs.204144	ESTs; Modly smlr to tumor necrosis factor-alpha-induced prot B12 [H.sapiens]	0.082
	112776	R95850	Hs.34494	ESTs	0.082
	105494	AA256273	Hs.29288	Homo sapiens mRNA; cDNA DKFZp434P174 (from clone DKFZp434P174)	0.082
	117000	H84718	Hs.112236	ESTs; Weakly similar to repressor protein [H.sapiens]	0.082
	112656	R85260	Hs.133151	transient receptor potential channel 7	0.082
40	128963	J03890	Hs.1074	surfactant; pulmonary-associated protein C	0.083
	116957	H79292	Hs.39960	ESTs	0.083
	101057	K03430		Human complement C1q B-chain gene, exon A+1	0.083
	121948	AA429452	Hs.98582	ESTs	0.083
	130822	M80647	Hs.2001	thromboxane A synthase 1 (platelet; cytochrome P450; subfamily V)	0.083
	122743	AA458674	Hs.99478	EST	0.083
45	114569	AA063316		zm2d1.s1 Stratagene corneal stroma (#937222) Homo sapiens cDNA clone IMAGE512947 3' similar to TR:E198281 E198281 THIOREDOXIN REDUCTASE; contains Alu repetitive element; mRNA sequence	0.083
	132270	U70671	Hs.43509	ataxin 2 related protein	0.083
50	108126	AA052951	Hs.47413	ESTs	0.083
	102880	X04325	Hs.2679	gap junction protein; beta 1; 32kD (connexin 32; Charcot-Marie-Tooth neuropathy; X-linked)	0.083
	115365	AA282089	Hs.88599	ESTs	0.083
	114529	AA052980	Hs.206704	ESTs	0.083
55	135017	AA249586	Hs.9315	ESTs; Weakly similar to NEURONAL OLFACTOMEDIN-RELATED ER LOCALIZED PROTEIN [H.sapiens]	0.083
	123776	AA610071	Hs.112813	ESTs	0.083
	114454	AA021091	Hs.228208	ESTs	0.083
	101246	L33799	Hs.202097	procollagen C-endopeptidase enhancer	0.083
60	107368	U78310	Hs.13501	pescadillo (zebrafish) homolog 1; containing BRCT domain	0.083
	132779	T89601	Hs.95497	ESTs; Weakly similar to GLUCOSE TRANSPORTER TYPE 5; SMALL INTESTINE [H.sapiens]	0.083
	129709	AA112209	Hs.1209	acyl-Coenzyme A dehydrogenase; long chain	0.083
65	115244	AA278767	Hs.914	Human mRNA for SB classII histocompatibility antigen alpha-chain	0.083
	123253	AA490878	Hs.111334	ferritin; light polypeptide	0.083
	128469	T23724	Hs.258677	EST	0.083
	132220	AA431847	Hs.42409	ESTs; Highly similar to CGI-146 protein [H.sapiens]	0.083
	111664	R17939	Hs.22344	ESTs	0.083
	102354	U38268		Human cytochrome b pseudogene, partial cds	0.084
	112828	R98774	Hs.194338	ESTs	0.084

5	110410	H47868	Hs.34024	ESTs	0.084
	102620	U66052		Human clone W2-6 mRNA from chromosome X	0.084
	102550	U58087	Hs.14541	cullin 1	0.084
	108417	AA075716		zm89a5.s1 Stratagene ovarian cancer (#837219) H sapiens cDNA clone IMAGE:54512 3' similar to gb:X14723 CLUSTERIN PRECURSOR (HUMAN);, mRNA sequence	0.084
10	113289	T67285	Hs.13089	ESTs	0.084
	117869	N49947	Hs.46990	ESTs	0.084
	113734	T98484	Hs.18377	EST	0.084
	133325	C00424	Hs.7101	periodontal ligament fibroblast protein	0.084
15	123368	AA505022	Hs.124838	ESTs	0.084
	101615	M55153	Hs.8265	transglutaminase 2 (C polypeptide; protein-glutamine -gamma-glutamyltransferase)	0.084
	119352	T65972	Hs.193365	ESTs; Moderately similar to alternatively spliced product using exon 13A [H.sapiens]	0.084
	123828	AA620686	Hs.112884	EST	0.084
20	103611	Z38133	Hs.113973	myosin; heavy polypeptide 8; skeletal muscle; perinatal	0.084
	131289	AA485697	Hs.25334	ESTs; Weakly similar to ION CHANNEL HOMOLOG RIC PRECURSOR [M.musculus]	0.084
	128678	T15896	Hs.103535	ESTs	0.084
	130814	AA256695	Hs.19813	ESTs	0.084
25	133391	X57579	Hs.727	inhibin; beta A (activin A; activin AB alpha polypeptide)	0.084
	129322	AA437153	Hs.110407	ESTs; Weakly similar to coded for by C. elegans cDNA yk173c12.5 [C.elegans]	0.084
	109284	AA196995	Hs.86092	ESTs	0.084
	116689	F09222	Hs.66099	ESTs	0.085
30	100545	HG2147-HT2217		Mucin 3, Intestinal (Gb:M55405)	0.085
	102634	U66711	Hs.77667	lymphocyte antigen 6 complex; locus E	0.085
	111735	R25389	Hs.23856	ESTs; Weakly similar to FAST kinase [H.sapiens]	0.085
	105181	AA190676	Hs.10974	ESTs; Moderately similar to unknown [R.norvegicus]	0.085
35	122681	AA455350	Hs.99401	EST	0.085
	114543	AA058121	Hs.158419	ESTs	0.085
	133597	AA425908	Hs.75139	partner of RAC1 (arfaptin 2)	0.085
	121064	AA398647	Hs.97406	ESTs	0.085
40	122231	AA436369	Hs.197728	ESTs; Weakly similar to ZINC FINGER PROTEIN 135 [H.sapiens]	0.085
	100309	D50550	Hs.95659	lethal giant larvae (Drosophila) homolog 1	0.085
	101727	M73481	Hs.73883	gastrin-releasing peptide receptor	0.085
	131226	AA165400	Hs.24476	ESTs	0.085
45	133580	AA095041	Hs.181073	ESTs	0.085
	102792	U87964	Hs.227578	GTP binding protein 1	0.085
	104976	AA086480	Hs.183669	ESTs; Weakly similar to II ALU SUBFAMILY J WARNING ENTRY II [H.sapiens]	0.085
	120855	AA350631	Hs.96963	EST	0.085
50	106080	AA418046	Hs.35124	ESTs	0.085
	126571	AA416819	Hs.101661	ESTs	0.085
	101838	M92934	Hs.75511	connective tissue growth factor	0.085
	128514	H84281	Hs.100843	ESTs; Weakly similar to similar to GTP-binding protein [C.elegans]	0.085
55	123099	AA485931	Hs.79	aminocyclase 1	0.085
	134067	Y08200	Hs.78920	Rab geranylgeranyltransferase; alpha subunit	0.085
	116967	H80336	Hs.40124	EST	0.085
	110053	H12586	Hs.89563	nuclear cap binding protein 1; 80kD	0.085
60	114395	AA007313	Hs.110155	ESTs	0.085
	107465	W44681	Hs.251385	murine retrovirus integration site 1 homolog	0.085
	101983	S85655	Hs.75323	prohibitin	0.085
	112544	R70948	Hs.29153	ESTs	0.086
65	111423	R01165	Hs.188507	ESTs	0.086
	127918	AA806043	Hs.115396	Human germline IgD chain gene; C-region; C-delta-1 domain	0.086
	107300	T40348	Hs.90488	ESTs	0.086
	134947	R51194		yj71a08.r1 Soares breast 2NbH8st Homo sapiens cDNA clone IMAGE:154166 5' similar to gb:U11284 DUAL SPECIFICITY MITOGEN-ACTIVATED PROTEIN KINASE KINASE 1 (HUMAN);, mRNA sequence.	0.086
70	124579	N68345	Hs.127179	ESTs; Weakly similar to TERATOCARCINOMA-DERIVED GROWTH FACTOR 1 [H.sapiens]	0.086
	130471	Z68280	Hs.183706	adducin 1 (alpha)	0.086
	116596	D60755	Hs.92955	ESTs	0.086
	105069	AA136345	Hs.23817	ESTs; Weakly similar to ZFOC1 gene product [H.sapiens]	0.086
75	102491	U51010		Human nicotinamide N-methyltransferase gene, exon 1 and 5' flanking region	0.086
	130069	AA055896	Hs.146428	collagen; type V; alpha 1	0.086
	130234	AA280413	Hs.157441	spleen focus forming virus (SFFV) proviral integration oncogene spl1	0.086
	120540	AA262892	Hs.98417	ESTs	0.086
80	122508	AA449221	Hs.20432	ESTs	0.086

5	128054	AI205718	Hs.125416	ESTs	0.086
	133020	AA053248	Hs.185182	ESTs; Highly similar to 40S RIBOSOMAL PROTEIN S10 [H.sapiens]	0.086
	130056	AA017356	Hs.171900	armadillo repeat gene deletions in velocardiofacial syndrome	0.086
	130504	U48865	Hs.158323	CCAAT/enhancer binding protein (C/EBP); epsilon	0.086
	133978	W73859	Hs.78081	transcription factor 21	0.086
10	105265	AA227941	Hs.26088	ESTs	0.086
	133035	T15865	Hs.6333	ESTs	0.086
	100768	HG3636-HT3846		Myosin, Heavy Polypeptide 9, Non-Muscle	0.086
	129338	T58800	Hs.47274	Homo sapiens mRNA; cDNA DKFZp564B176 (from clone DKFZp564B176)	0.086
	132789	W23781	Hs.56876	ESTs	0.086
15	116099	AA456309	Hs.58831	regulator of Fas-induced apoptosis	0.086
	100721	HG3355-HT3532		Peroxisome Proliferator Activated Receptor (Gbz30972)	0.087
	112569	R73150	Hs.75270	GTP-binding protein homologous to Saccharomyces cerevisiae SEC4	0.087
	130645	AA020942	Hs.17200	STAM-like protein containing SH3 and ITAM domains 2	0.087
	100751	HG3527-HT3721		Luteinizing Hormone, Beta Subunit	0.087
20	134550	M27161	Hs.85258	CD8 antigen; alpha polypeptide (p32)	0.087
	130885	AA338646	Hs.20912	adenomatous polyposis coli like	0.087
	101446	M21302	Hs.56306	small proline-rich protein 2A	0.087
	116287	AA487856	Hs.155829	KIAA0676 protein	0.087
	134034	X89257	Hs.78601	uroporphyrinogen decarboxylase	0.087
25	130860	U66061	Hs.241395	protease; serine; 1 (trypsin 1)	0.087
	109901	H04932	Hs.30499	ESTs	0.087
	107537	Z20777	Hs.9857	ESTs; Weakly similar to peroxisomal short-chain alcohol	0.087
	133232	AA496030	Hs.6845	dehydrogenase [H.sapiens]	0.087
	108559	AA085161		ESTs	0.087
30	121288	AA401735	Hs.97340	zn12c5.s1 Stratagene hNT neuron (#337233) H sapiens cDNA clone	0.087
	108844	AA132916	Hs.177961	IMAGE:54728 3' similar to TR:G1151228 G1151228 LPG1P.; mRNA seq	0.087
	129874	AA406488	Hs.181551	EST	0.087
	105139	AA184543	Hs.110082	Human Chromosome 16 BAC clone CIT987SK-A-388D4	0.087
	124789	R43803	Hs.78110	ESTs	0.087
35	115923	AA441929	Hs.38205	ESTs	0.088
	123640	AA609292	Hs.112681	ESTs	0.088
	131607	AA351409	Hs.172740	ESTs	0.088
	130064	T67053	Hs.181125	microtubule-associated protein; RP/EB family; member 3	0.088
	108752	AA127070	Hs.71055	immunoglobulin lambda gene cluster	0.088
40	124249	H68077	Hs.108211	ESTs	0.088
	100109	AJ000480	Hs.143513	ESTs	0.088
	104642	AA004662	Hs.184245	phosphoprotein regulated by mitogenic pathways	0.088
	131752	AA453311	Hs.31566	KIAA0929 protein Mx2 interacting nuclear target (MINT) homolog	0.088
	114727	AA132545	Hs.190202	ESTs	0.088
45	120965	AA398089	Hs.179715	ESTs	0.088
	100396	D84361	Hs.151123	ESTs	0.088
	106218	AA428451	Hs.91146	Human mRNA for p52 and p64 isoforms of N-Shc; complete cds	0.088
	111562	R09587	Hs.187569	DKFZP586E0820 protein	0.088
	121219	AA400606	Hs.144344	ESTs	0.088
50	101187	L20316	Hs.208	EST	0.088
	101513	M28210	Hs.27744	glucagon receptor	0.088
	116454	AA621071	Hs.42034	RAB3A; member RAS oncogene family	0.088
	116171	AA463434	Hs.42658	ESTs; Moderately similar to T-complex protein 10A [H.sapiens]	0.088
	117500	N31909	Hs.44278	ESTs	0.089
55	119978	W88823	Hs.59190	ESTs	0.089
	132005	D58231	Hs.173091	EST	0.089
	109914	H05529	Hs.184704	DKFZP434K151 protein	0.089
	130370	M55265	Hs.155140	leucine-rich; glioma inactivated 1	0.089
	104262	AF009801	Hs.105941	casein kinase 2; alpha 1 polypeptide	0.089
60	129708	AA417181	Hs.120858	bagpipe homeobox (Drosophila) homolog 1	0.089
	106398	AA447545	Hs.18268	ESTs	0.089
	120884	AA365356	Hs.97041	adenylate kinase 5	0.089
	130404	X72012	Hs.78753	ESTs	0.089
	114072	Z38184	Hs.123633	endoglin (Osler-Rendu-Weber syndrome 1)	0.089
65	131470	X54938	Hs.2722	ESTs	0.089
	124573	N67935	Hs.184703	inositol 1,4,5-trisphosphate 3-kinase A	0.089
	114717	AA131240	Hs.252014	adaptor-related protein complex 4; mu 1 subunit	0.089
	133806	M12759	Hs.76325	EST	0.089
	130470	AA398552	Hs.15711	Human Ig J chain gene	0.09
	133182	Z80787	Hs.240135	KIAA0639 protein	0.09
	116036	AA452572	Hs.43866	H4 histone family; member J	0.09
				ESTs	0.09

	132404	AA393903	Hs.4768	ESTs	0.09
	122695	AA456048	Hs.99403	ESTs; Moderately similar to undulin 2 [H.sapiens]	0.09
	125975	AA485891	Hs.152280	ESTs; Highly similar to PACAP type-3/VIP type-2 receptor [H.sapiens]	0.09
	110783	N23669	Hs.26407	ESTs	0.09
5	129860	AA410343	Hs.129826	tetraspan transmembrane 4 super family	0.09
	120740	AA302650	Hs.96654	EST	0.09
	119564	W38206		Accession not listed in Genbank	0.09
	134474	AA054746	Hs.8379	ESTs	0.09
10	119014	N95435	Hs.55144	ESTs	0.09
	109791	F10669	Hs.13228	DRE-antagonist modulator; calsenlin	0.09
	117605	N35073	Hs.44433	ESTs	0.09
	121589	AA416627	Hs.191598	ESTs	0.09
	104326	D81655	Hs.143067	ESTs	0.09
	129861	N69507	Hs.129849	DKFZP564M182 protein	0.09
15	102795	U88667	Hs.198396	ATP-binding cassette; sub-family A (ABC1); member 4	0.09
	118626	W49499	Hs.184456	ESTs; Wkly smir to II ALU SUBFAMILY SX WARNING ENTRY II [H.sapiens]	0.09
	110516	H56894	Hs.37368	EST	0.09
	105382	AA236853	Hs.111801	Homo sapiens mRNA; cDNA DKFZp564H2023 (from clone DKFZp564H2023)	0.09
	123754	AA609984	Hs.102021	ESTs	0.09
20	108008	AA039430	Hs.81820	ESTs	0.09
	121057	AA398619	Hs.142375	ESTs; Moderately similar to putative envelope protein [H.sapiens]	0.091
	123675	AA609474	Hs.112713	EST	0.091
	135194	C20975	Hs.9613	ESTs; Highly similar to angioipoetin-related protein [H.sapiens]	0.091
	127070	AA641812	Hs.190037	ESTs	0.091
25	134051	S67070	Hs.78846	heat shock 27kD protein 2	0.091
	133382	AA112532	Hs.7247	ESTs	0.091
	103615	Z46967	Hs.115480	calicin	0.091
	118457	N66593	Hs.49230	EST	0.091
	118504	N67334	Hs.50158	ESTs	0.091
30	112915	T10176	Hs.4254	ESTs	0.091
	132088	AA470121	Hs.243960	HLA-B associated transcript-3	0.091
	101504	M27288	Hs.248156	oncostatin M	0.091
	112550	R71391	Hs.28074	ESTs	0.091
	128551	H09058	Hs.237323	N-acetylglucosamine-phosphate mutase; DKFZP434B187 protein	0.091
35	112879	T03541	Hs.115960	ESTs	0.091
	127079	A1364691	Hs.128628	ESTs; Moderately similar to CL3BC [R.norvegicus]	0.091
	101993	U01062	Hs.77515	inositol 1,4,5-triphosphate receptor; type 3	0.091
	113020	T23830	Hs.7303	ESTs; Weakly similar to PROHIBITIN [H.sapiens]	0.091
	120465	AA251505	Hs.130861	ESTs	0.091
40	130152	U32645	Hs.151139	E74-like factor 4 (ets domain transcription factor)	0.091
	104941	AA065169	Hs.17805	ESTs	0.091
	110090	H16076	Hs.6915	ESTs	0.091
	135375	AA480888	Hs.99741	ESTs; Weakly similar to BRAIN PROTEIN H5 [H.sapiens]	0.091
	123799	AA620418	Hs.112861	ESTs	0.092
45	118966	N93438	Hs.76907	ESTs; Highly similar to HSPC002 [H.sapiens]	0.092
	116969	H80633	Hs.143038	ESTs	0.092
	125147	W38150		Accession not listed in Genbank	0.092
	100836	HG41113-HT4383		Olfactory Receptor Or17-201	0.092
50	114726	AA132509	Hs.103827	EST	0.092
	107311	T57738	Hs.174112	ESTs	0.092
	112863	T03148	Hs.4810	EST	0.092
	129290	AA521407	Hs.110095	ESTs	0.092
	103384	X92762	Hs.79021	tafazzin (cardiomyopathy; dilated 3A (X-linked); endocardial fibroelastosis 2; Barth syndrome)	0.092
55	112508	R68213	Hs.28847	ESTs	0.092
	111863	R37495	Hs.23578	ESTs	0.092
	131184	AA452705	Hs.23954	ESTs; Weakly similar to KIAA0584 protein [H.sapiens]	0.092
	107420	W26567	Hs.4775	ESTs	0.092
	111768	R27606	Hs.24185	ESTs	0.092
60	112290	R53940	Hs.26016	ESTs	0.092
	130581	AA481982	Hs.16258	ESTs; Weakly similar to RAS-RELATED PROTEIN RAB-5A [H.sapiens]	0.092
	120744	AA302772	Hs.228649	EST	0.093
	112226	R50761	Hs.25738	ESTs	0.093
	116154	AA480951	Hs.57100	ESTs	0.093
65	102640	U67674	Hs.194783	solute carrier family 10 (sodium/bile acid cotransporter family); member 2	0.093
	129797	X53595	Hs.1252	apolipoprotein H (beta-2-glycoprotein I)	0.093
	102705	U77180	Hs.50002	small inducible cytokine subfamily A (Cys-Cys); member 19	0.093
	132408	AA035547	Hs.47822	KIAA0380 gene product; RhoA-specific guanine nucleotide exchange factor	0.093
	108441	AA079079		zm97c9.s1 Stratagene colon HT29 (#937221) Homo sapiens cDNA clone	0.093

			IMAGE:545872 3' similar to contains element MER22 MER22 repetitive element ;, mRNA sequence	0.093	
	108145	AA054133	Hs.63085	ESTs	0.093
	106466	*AA449990	Hs.76057	lysophospholipase II	0.093
5	101697	M64358		Human rhom-3 gene, exon	0.093
	121294	AA401958	Hs.240170	ESTs; Moderately similar to alternatively spliced product using exon 13A [H.sapiens]	0.093
	117824	N49065	Hs.125201	ESTs; Weakly similar to B7 [M.musculus]	0.093
	115771	AA422049	Hs.40780	ESTs	0.093
10	102303	U33053	Hs.2499	protein kinase C-like 1	0.093
	131405	U79255	Hs.26468	amyloid beta (A4) precursor protein-binding; family A; member 2 (X11-like)	0.093
	112909	T10069	Hs.101094	ESTs	0.093
	124173	H41281	Hs.107819	ESTs	0.093
	112488	R66896	Hs.28788	ESTs	0.093
15	130554	X59303	Hs.159637	valyl-tRNA synthetase 2	0.093
	106413	AA447964	Hs.6311	ESTs	0.093
	111711	R22891	Hs.7093	ESTs	0.094
	117595	N34933	Hs.44664	EST	0.094
	113813	W45174	Hs.31382	ESTs	0.094
20	107769	AA018449	Hs.125220	Homo sapiens DNA from chromosome 19-cosmids R30102:R29350:R27740 containing MEF2B; genomic sequence	0.094
	114966	AA250743	Hs.92198	ESTs; Highly similar to calcium-regulated heat stable protein CRHSP-24 [H.sapiens]	0.094
	130297	H94949	Hs.171955	trophinin-assisting protein (tastin)	0.094
25	109589	F02429	Hs.6581	ESTs	0.094
	112592	R77631	Hs.29126	ESTs	0.094
	102314	U34038	Hs.154299	coagulation factor II (thrombin) receptor-like 1	0.094
	116128	AA459915	Hs.112193	mutS (E. coli) homolog 5	0.094
30	106809	AA479704	Hs.220324	Human DNA sequence from clone 283E3 on chromosome 1p36.21-36.33. Contains the alternatively spliced gene for Matrix Metalloproteinase in the Female Reproductive tract MIFR1; -2; MMP21/22A; -B and -C; a novel gene; the alternatively spliced CDC2L2 gene for	0.094
	130607	AA043894	Hs.16603	ESTs	0.094
	120592	AA281929	Hs.143974	ESTs	0.094
35	117230	N20535	Hs.43265	melastatin 1	0.094
	105948	AA404597	Hs.7133	ESTs	0.094
	101333	L47738	Hs.80313	p53 inducible protein	0.094
	101909	S69265		Homo sapiens mRNA for PLE21 protein; complete cds	0.094
	106959	AA497031	Hs.8657	ESTs; Highly similar to CTG7a [H.sapiens]	0.094
40	127034	AA352389		ESTs; Wkly smir to glucose-6-phosphatase catalytic subunit [R.norvegicus]	0.095
	134430	H52105	Hs.8309	KIAA0747 protein	0.095
	120342	AA207105	Hs.45068	Homo sapiens mRNA; cDNA DKFZp434i143 (from clone DKFZp434i143)	0.095
	104450	L77564	Hs.103978	serine/threonine kinase 22B (spermiogenesis associated)	0.095
	130902	AA424530	Hs.21061	ESTs	0.095
45	102708	U77594	Hs.37682	retinoic acid receptor responder (tazarotene induced) 2	0.095
	107373	U85773	Hs.154695	phosphomannomutase 2	0.095
	123569	AA608952	Hs.185292	ESTs; Weakly similar to RNA helicase HDB/DICE1 [H.sapiens]	0.095
	102687	U73379	Hs.93002	ubiquitin carrier protein E2-C	0.095
	128888	AA034951	Hs.106893	ESTs	0.095
50	100283	D43642	Hs.2430	transcription factor-like 1	0.095
	102747	U79303	Hs.82482	protein predicted by clone 23882	0.095
	107798	AA019346	Hs.60918	EST	0.095
	123565	AA608907	Hs.112614	EST	0.095
	116010	AA449450	Hs.56421	ESTs; Weakly similar to Similarity to H.influenza ribonuclease PH [C.elegans]	0.095
55	117155	H97536	Hs.42391	EST	0.095
	133094	AA115572	Hs.64746	chloride intracellular channel 3	0.095
	113174	T54659	Hs.9779	ESTs	0.095
	102016	U03270	Hs.122511	centrin; EF-hand protein; 1	0.095
	130126	AB002318	Hs.150443	KIAA0320 protein	0.095
60	134813	X14767	Hs.89768	gamma-aminobutyric acid (GABA) A receptor; beta 1	0.095
	132055	N69440	Hs.38132	ESTs	0.095
	122229	AA438198	Hs.103902	ESTs	0.096
	127574	AA907314	Hs.188905	ESTs	0.096
	134432	AA053022	Hs.8312	ESTs	0.096
65	128052	AA878398	Hs.190491	ESTs	0.096
	101637	M56285	Hs.132834	hematopoietic protein 1	0.096
	103386	X92972	Hs.80324	protein phosphatase 6; catalytic subunit	0.096
	133079	AA477561	Hs.6449	ESTs	0.096
	120328	AA196979	Hs.104129	ESTs; Weakly similar to protease [H.sapiens]	0.096

	107640	AA009615	Hs.257808	ESTs	0.096
	123389	AA521176	Hs.221231	ESTs	0.096
	103222	X74795	Hs.77171	minichromosome maintenance deficient (S. cerevisiae) 5 (cell division cycle 48)	0.096
5	111704	R22450	Hs.23396	ESTs; Highly similar to ZINC FINGER PROTEIN 140 [H.sapiens]	0.096
	126856	AA306523		EST177475 Jurkat T-cells VI Homo sapiens cDNA 5' end, mRNA sequence.	0.733
	127071	AA250806		ESTs	0.096
	114550	AA056755	Hs.151714	ESTs	0.096
	125955	AI356943	Hs.143761	ESTs	0.096
10	134363	M37033	Hs.82212	CD53 antigen	0.096
	128550	W76492	Hs.170142	ESTs	0.096
	122598	AA453465	Hs.99329	ESTs	0.096
	118898	N90703	Hs.4236	KIAA0478 gene product	0.096
	117661	N39082	Hs.44940	ESTs	0.096
	120996	AA398281	Hs.143684	ESTs	0.096
15	123388	AA521172	Hs.134417	ESTs	0.096
	106700	AA463929	Hs.28701	ESTs	0.096
	112962	T16814	Hs.6828	ESTs	0.096
	121262	AA401372	Hs.97723	ESTs	0.096
	134551	R44839	Hs.8526	i-beta-1,3-N-acetylglucosaminyltransferase	0.096
20	112060	R43754	Hs.21164	ESTs	0.096
	134678	AA039935	Hs.182595	dynein; axonemat; light polypeptide 4	0.096
	100855	HG4234-HT4504		Methylenetetrahydrofolate Reductase	0.097
	132414	N91183	Hs.48145	ESTs	0.097
	112900	T08758	Hs.3813	ESTs	0.097
25	115989	AA447777	Hs.93135	ESTs	0.097
	103561	Z21488	Hs.143434	contactin 1	0.097
	131087	AA009738	Hs.22824	ESTs; Weakly similar to p160 myb-binding protein [M.musculus]	0.097
	120293	AA190859	Hs.191428	ESTs	0.097
	111830	R36081	Hs.25085	EST	0.097
30	113654	T95770	Hs.17666	ESTs	0.097
	132675	AA179338	Hs.5476	serine proteinase inhibitor	0.097
	120182	Z40125	Hs.91968	ESTs	0.097
	132879	U16282	Hs.5881	ELL gene (11-19 lysine-rich leukemia gene)	0.097
35	134211	AA056681	Hs.80021	ESTs; Weakly similar to 62D9.p [D.melanogaster]	0.097
	115448	AA284845	Hs.165051	ESTs	0.097
	118118	N56901	Hs.47895	ESTs	0.097
	107598	AA004528	Hs.169444	ESTs	0.097
	128933	H01824	Hs.760	GATA-binding protein 2	0.097
	114892	AA235988	Hs.88024	ESTs	0.097
40	101922	S75168	Hs.274	megakaryocyte-associated tyrosine kinase	0.097
	105444	AA252374	Hs.18333	ESTs; Weakly similar to ATP (GTP)-binding protein [H.sapiens]	0.097
	126155	AA926843	Hs.143302	ESTs	0.097
	116276	AA485870	Hs.44914	ESTs	0.097
	111964	R41227	Hs.21860	ESTs	0.097
45	135100	AA398926	Hs.251108	Homo sapiens mRNA; chromosome 1 specific transcript KIAA0493	0.097
	124872	R69251	Hs.101506	EST	0.097
	103084	X59932	Hs.77793	c-src tyrosine kinase	0.097
	124138	H23199	Hs.107010	ESTs	0.098
	130048	R31745	Hs.211612	SEC24 (S. cerevisiae) related gene family; member A	0.098
50	100208	D26129	Hs.78224	ribonuclease; RNase A family; 1 (pancreatic)	0.098
	123537	AA608775	Hs.112589	ESTs	0.098
	118999	N95019	Hs.55092	ESTs	0.098
	118847	W80384	Hs.9853	ESTs	0.098
	112819	R98618	Hs.35984	ESTs	0.098
55	131080	J05008	Hs.2271	endothelin 1	0.098
	127353	AA190853	Hs.155380	ESTs	0.098
	132068	X66365	Hs.38481	cyclin-dependent kinase 6	0.098
	105744	AA293436	Hs.12909	ESTs	0.098
	133680	M92357	Hs.101382	tumor necrosis factor; alpha-induced protein 2	0.098
60	122899	AA469960	Hs.178420	ESTs; Highly similar to WASP interacting protein [H.sapiens]	0.098
	128700	U59286	Hs.103982	small inducible cytokine subfamily B (Cys-X-Cys); member 11	0.098
	104393	H46486	Hs.226499	nesca protein	0.098
	123320	AA496792	Hs.139572	EST	0.098
	129169	N31641	Hs.109058	ribosomal protein S6 kinase; 90kD; polypeptide 5	0.098
65	135093	U51333	Hs.159237	hexokinase 3 (white cell)	0.098
	113269	T65159	Hs.85044	ESTs	0.098
	124283	H86783	Hs.184136	ESTs; Moderately similar to zinc finger protein RIN ZF [R.norvegicus]	0.098
	114376	GMCSF		Accession not listed in Genbank	0.099
	100881	HG4458-HT4727		Immunoglobulin Heavy Chain, Vdjc Regions (Gb1.23563)	0.099

5	116572	D45654	Hs.65582	DKFZP586C1324 protein	0.099
	123956	AA621747	Hs.112847	EST	0.099
	100818	HG4018-HT4288		Optoid-Binding Cell Adhesion Molecule	0.099
	132754	W47419	Hs.56007	Human DNA from chromosome 19-specific cosmid F25965; genomic sequence	0.099
	112741	R93080	Hs.35035	ESTs	0.099
10	112748	R93289	Hs.166482	ESTs	0.099
	130858	S57235	Hs.246381	CD68 antigen	0.099
	124870	R69233	Hs.101504	ESTs	0.099
	125904	Z39833	Hs.124940	GTP-binding protein	0.099
	121287	AA401995	Hs.97860	ESTs	0.099
15	128602	AA046103	Hs.102367	ESTs	0.099
	124082	H00440	Hs.144524	ESTs; Weakly similar to signal transducer and activator of transcription 2 [M.musculus]	0.099
	100547	HG2149-HT2219		Mucin (Gb:M57417)	0.099
	105652	AA282505	Hs.19015	ESTs	0.099
	133390	AA459945	Hs.72660	KIAA0585 protein	0.099
20	133503	M33195	Hs.743	Fc fragment of IgE; high affinity I; receptor for; gamma polypeptide	0.099
	109461	AA232667	Hs.58210	ESTs	0.099
	102068	U09117	Hs.80776	phospholipase C; delta 1	0.099
	113464	T86931	Hs.16295	ESTs	0.099
	104240	AB002368	Hs.70500	KIAA0370 protein	0.099
25	121113	AA399109	Hs.161813	ESTs	0.1
	122896	AA469952	Hs.97899	ESTs; Weakly similar to dal2; len:343; CAI: 0.17; ALC_YEAST P25335	0.1
	102405	U43148	Hs.159526	ALLANTOICASE [S.cerevisiae]	0.1
	103599	Z33905	Hs.81218	patched (Drosophila) homolog	0.1
	121079	AA398719	Hs.14169	receptor-associated protein of the synapse; 43kD	0.1
30	115820	AA427487	Hs.39619	ESTs; Weakly similar to CREB-binding protein [H.sapiens]	0.1
	125106	T95766	Hs.189760	ESTs; Weakly similar to RETICULOCALBIN 1 PRECURSOR [H.sapiens]	0.781
	131373	N68116	Hs.26146	ESTs	0.1
	120224	Z41239	Hs.106960	Down syndrome critical region gene 3	0.1
	133090	AA448228	Hs.6468	ESTs	0.1
35	132300	AA133244	Hs.44234	ESTs	0.1
	113129	T49384	Hs.8988	EST	0.1
	110638	H73197	Hs.17241	ESTs	0.1
	131364	R53255	Hs.26010	ESTs	0.1
	105370	AA236476	Hs.22791	ESTs; Weakly similar to transmembrane protein with EGF-like and two follistatin-like domains 1 [H.sapiens]	0.238
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**TABLE 11A** shows the accession numbers for those primekeys lacking unigeneID's for Table 11. For each probeset we have listed the gene cluster number from which the oligonucleotides were designed. Gene clusters were compiled using sequences derived from Genbank ESTs and mRNAs. These sequences were clustered based on sequence similarity using Clustering and Alignment Tools (DoubleTwist, Oakland California). The Genbank accession numbers for sequences comprising each cluster are listed in the "Accession" column.

	Pkey:	Unique Eos probeset identifier number	
	CAT number:	Gene cluster number	
	Accession:	Genbank accession numbers	
	Pkey	CAT number	Accession
10	100610	19864_1	AW161357 AI879062 AI928938 AW161097 AW161167 BE314465 AA351715 F07096 AA179034 F08510 F00653 AI936671 AA476718 AW772454 AI807703 R44253 AA976687 AI985186 AI650254 H38942 R84829 AA018724 AA001000 H85934 AA019126 H85609 AA017000 AA339355 AW950556 D51397 AA213981 BE548002 AI056359 AA001560 AW952113 AA317769 AI857477 AI857475 AW249771 AW162661 H38943 AA018628 R85885 AI984613 AI934765 AI796172 AW157488 AI929191 R85523 D51221 D53851 H85610 AI749674 F21582 AA323145 AA019127 AA687444 T08745 AI699293 H29532 AA214029 AA223656 NM_016834 X14474 R18697 H09695 R17455 R13812 R19056 AI681231 AI590200 R37671 AA861828 AI990023 AI935669 AW005821 AA324581 H17335 R37659 R42802 R46242 R60936 R59731 H28993 AA479907 R44570 AI890696 AA308884 AA507078 R41274 AI365507 T16348 AI560453 F03259 F04722 T16312 AA016081 AW073061 BE314824 W28930 R44098 R51045
15	100674	21517_2	AW403342 AW248986 BE561709 AA357312 BE311834 BE389496 BE294887 AW732696 BE047668 AI702383 BE019155 AI702367 BE408966 BE280458 BE313759 BE513492 BE535404 BE280258 AC005263 NM_007165 L21990 AW732711 AI564920 AW249094 BE265365 AW607186 AW607346 BE005217 H27211 U48230 BE260066 BE207043 BE546782 AW248659
20	108559	41469_9	AA085228 AA085161
25	100721	19818_1	L40904 NM_005037 X90563 AB005526 H21598 AA088517
30	100748	41861_1	X06096 X05826
35	100750	15759_1	BE157260 BE157265 R48118 H43827 Z17877 AW379070 AW291778 M20605 J03253 M14206 V00568 AI860465 AW296022 M13930 AL047400 J00120 BE018476 AW875223 T26980 F06694 R22709 R24720 H22753 AI903100 AI903094 AW837823 X00364 D10493 K01904 K01906 K00535 L00058 AA410662 AW384760 AA304930 AI680985 X00198 H58025 AW998901 AV653447 N31654 AW610357 AW610369 AW862480 BE223010 AW384172 AW384219 AW384171 AW384218 AA298522 BE140421 AW945162 AW751711 AA514409 AW747912 AI214214 W87741 AA972406 AA554513 BE302087 AI249030 AA477850 AV653129 AI281360 AI274110 W87881 AA641368 X66258 AI051600 AA877139 AA527483 AA857219 AI250782 AA625531 AA807892 AI278811 AI224033 H24033 AA593396 AW129709 R45453 N22772 AA235530 T29737 AI016409 AI688907 AA568370 AA722760 AI539329 AA550843 AW674898 AI538452 AI538453 AI337957 AA477744 AA484600 AI140319 AW949294 AI339781 AI828736 AA923634 AA344094 AI278350 AA975567 AA908416 AA857170 AW023520 R43413 R48004 F02958 AI989439 R11207 AA737307 D10493 AW950652 AI093842 AI474024 AA703369 R11264 M13930 M13930 M13930 M13930 J00120 M13930 M13930 X00364 J00120 R19507 AA639812
40	100751	24700_1	N32759 N29730 N30831 N32604 N31955 AI206390 H87574 R23494 AI186215 N30036 AI741512 J00117 NM_000737 AI453626 AA330974 AI188729 AI188604 AI188964 N30276 AI188947 AI188830 AI188303 AI200457 AI219166 AI192459 AI183280 AI189275 AI188639 AI186353 AI189616 AI184224 AI130720 AI188454 AI188391 AI148857 AI192447 AI209155 AI190013 AI206355 AI188721 AI189429 AI189364 AI188330 AI431595 AI189595 AI188781 AI148647 AI200022 AI221552 AI220923 AI188728 AA233034 AI189807 AI189641 AI219044 AI148774 AI200658 W71989 AI207360 AI188824 AI200559 AI200270 AA644163 AI199943 AI151301 AI189555 AI262724 AI148590 AI148695 AI126906 AI149163 K03183 K03189 AI189842 AI221014 N30608 AI188465 AI220865 AI188498 AI138226 AI189968 AI221019 AI138197 AI149426 AI148904 AI186218 AI188348 AI160579 AI198460 AI149039 AI160936 AI219055 AI184784 AI221580 AI161082 AI160814 AI123896 AI417614 AI126101 AI188872 AI149571 AI168533 AI149072 AI149467 AI131286 N30684 AI160705 AI160692 AI149559 AI273580 AI189442 AI138448 AI149591 N27302 AA400910 AI138431 AI138435 AI128407 N30216 AI128296 AI219589 AI188492 AI149447 AI168482 H95374 AI219009 N31616 AI276216 N32233 AI291937 N30741 AI186689 N27111 R23214 AI221605 AI184348 AI200375 H94451 N26397 AI871881 AA232905 N30833 AI220780 H94446 N30822 H87464 R68815 N30290 AI128424 H12587 T47334 H87631 H87156 AI219133 AI868741 AA330859 H86993 AA330413 H93656 N30817 T90191 H93668 AI200054 H95207 T47316 H95381 T49170 R00880 T49171 N27381 H94107 R63352 T85053 AW451899 H95142 N30313 H94015 H86987 T28278 N29701 C18834 AA331267 AA330939 AI654493 N27073 N29831 R68113 N30758 R26086 N32108 H95135 AA330414 AA330978 AI218422 AI189453 AI199951 X00264 NM_000894 AA371909 AA063496 T29543 AA371971 AA372026 AA371978 AA371346 AI051583 AI186418 AI220659 AI189068 AI218266 AI186552 AI188715 AI149156
45	100760	1334_7	AW794626 M27126 M27014
50	100775	18178_3	J05581 M61170 T27692 M34088 M34089 AW860335 AW579047 AW610437 AW610386 AW610422 AW610473 AW579078 AW604897 AW860163 AW579067 AW862410 AI816584 AW177757 AW602769 AI909790 AW860331 AI909787 AI909811
55			
60			
65			



AI909813 AW845083 AI905920 AW387919 BE140766 AI909279 AW369405 AA428321 AA429320 AA367451 AA847972  
 AW001137 AI567905 T84561 AI631295 AA151351 H02932 AI884519 AA367457 AW369421 AI678846 AW391803 AI610869  
 AW192838 AI922289 AI952140 AI910233 AI479474 AW001395 AA488073 AI985760 AW130017 AI858369 AA827845  
 AW081805 AA158865 AI624443 AA344985 AA569793 R72486 AI589329 AI903204 AI269893 AA641284 AI279932 AA149270  
 AI697120 AA729146 AI589353 AA480067 AI923310 AA530908 AI275395 AA425062 AA580280 AA889527 AA158866  
 AW131341 AA573028 AA877326 T29335 AW951288 H04235 AA099243 AA994659 AI659618 AA887919 AI298297  
 AW001116 AW263844 AI270578 AA970828 AW572126 AA775299 AW369449 AW369398 AW369452 AI933677 AI870710  
 AI092911 AI582464 AI497674 AA937026 AA885865 L38597 AA908325 AW369432 AW026623 AA627778 AI264942  
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 AA358363 R50282 AW473880 H52335 H43953 H21864 T39505 AI887517 AW156925 AW839850 H02628 AW007705  
 AI561008 F22392 R71279 AA995433 R50725 W24462 R71931 AA464437 AW591731 R25667 R52695 R50810 AI560805  
 AI089266 H68386 H41353 H28590 AW001860 AI141623 AA250773 AI284778 AW511412 AW083975 AA130377 AW026047  
 R50551 R81494 AI357668 AI078272 F32666 F36981 AW304865 AI43906 AA931068 R48010 AI540217 AI017339 AI291812  
 AI741954 AA458490 AI088378 AA298764 H61168 AA358362 AA298725 AA298515 AA464148 AA443538 R43046 AA084314  
 T40841 T47608 T48940 AI082477 AW470145 N92284 AI758958 AA298512 AA284588 AI597777 AA480277 AI932559  
 AI869081 AA476615 AA503651 AI556024 AW168522 AI882051 AI689108 AI274592 AI520917 BE258916 BE615861  
 BE280282 R53386 BE278255 BE278398 T47607 AA477662 H68385  
 100817 19848\_1 L34355 L46810 NM\_000029 U08895 AA424260 AI097272 AA424162 N79764 F18290 F25278 AI479385  
 AA460662 AA432059 AW016935 F25770 F32549 F36677 F33016 F35992 F36010 AW172497 AA835076 F28727 AA211643  
 AA453282  
 100818 19804\_3 U79251 AA843851 R38201 R66461 R44908 AA683289 H17477 R37364 R52832 AW298336 AA351391 NM\_002545 L34774  
 AA296888 AW967001 T28889 R13451 T77331 AL119196 AL118830 H08459 AW892812 AW905838 H17665 R52878  
 BE561958 BE561728 BE397612 BE514391 BE269037 BE514207 BE562381 BE514256 BE514403 BE514250 BE397832  
 BE269598 BE559865 BE396881 BE560031 BE514199 BE560037 BE560454  
 X07881 NM\_008249 X07637 AA376715 AA376677 X07715 X07704 S80916  
 BE387614 R51501 AA199714 AW674779 F08178 BE269071 AA376313 H08264 AA380420 H18785 AL042151 BE277758  
 BE267438 NM\_005850 L35013 BE540833 BE390902 BE391494 BE277459 BE385592 BE390612 BE384263 BE387779  
 BE386647 BE537373 BE547158 AW408585 AW374033 AW602185 AA355725 AW577548 AW935015 AW935160 W40232  
 AW938647 AW374332 AA434040 BE293488 AI138361 BE560260 AI745075 AA317980 AW949382 AI834311 AI653582  
 AI831042 AI361878 AA618606 AA729052 AI424969 AA189715 AW769374 AI828422 AW044307 AI862816 AI203583  
 AW084461 AW514655 AA831883 AA290672 AA831286 AA578510 AW089965 AW150746 AA292743 H22232 AA68275  
 AW439312 AA292744 AW471443 AI473989 AA593336 AA464070 AI678937 AW069451 AA970763 AA610480 AA593328  
 AA464009 AA768985 AI288828 AA436600 AA484718 AA699361 D61482 D55935 AI389591 AA470695 AI809135 AA640627  
 AI568446 R51502 W45467 AI655316 AA463934 AW168609 AW518663 BE045525 Z41251 AI868091 AA908160 AI026697  
 AI886259 AI612932 AA215437 AI956014 BE541087 BE255652 BE265878 BE394102 W27502  
 U48936 L36592 X87160 NM\_001039 AL036606 AL036420 U35630 AW298574  
 W80551 M85370  
 AA976427 U66052  
 AI457548 U72509  
 U72512 T98357 R31335 F18090  
 L32961 NM\_000683 U80226 S75578 AA425061 AA429317 AI815143 AA910669 AI286022 AI286019  
 U88896 U88898 AA916056 T03285 AI341594 AI359534 AI834031 U88897  
 BE397750 AA232171 BE562900 BE384894 BE242228 BE206819 BE261742 AA286468 AW959763 BE276164 BE264109  
 BE392626 BE256735 AA301453 N55872 H01676 AA292746 AA427485 AA498400 AA352389  
 Y10518 Y10514 Z83935 Y10508 AK000055 Y10519 AI142012 AI681175 BE222219 AA890586 BE504347 BE328064 N63044  
 N51226 AI151248 AI521996 AI924777 AW375954 AI860275 W00549 AI742673 AW612288 AI763062 AA632510 AI087347  
 AI088070 AI214349 AA890297 AI494156 AI698598 AA631658 AA504593 AA860733 AI266761 AW663214 AW771231  
 AA639610 AI769806 AI769746 AW014326 AI288611  
 AA250806 AA459220  
 AA429212 W00881  
 T88798 R92430  
 AI084125 AI083773 AI479687 AI939609 AI968662 AF129507 NM\_013282 AW971840 AW298508 AA744240 AA811217  
 AA827671 AA811055 AA806587 AA488977 AA908902 AI637637 AA927056 AI870139 AW340492 AA488755 AA129794  
 AA306523 AA354253 BE256277 AC053467 AW962084  
 AA321355 AW964592 R23284 H73883 R23382 N47914 C01377 H04668 AW606248 R34447 AA847136 AI684489 AI523112  
 AW044269 AI379138 N29366 AA761543 N79248 AA960845 AA768316 AI147926 AI718599 AI880620 R67467 AI216016  
 AI738663 H04648  
 NM\_001395 Y08302 AI434619 AI470328 AI281807 AW024965 AI806537 AI830549 AI640337 AI219065 AW271700  
 AW028488 AI133339 AI859205 R51175 U87167 BE379324 BE392008 AA340819 AA343110 T52775 D59164 AW299312  
 AI434422 AI936390 AW024975 R40262  
 AW269126 R09430 T56590 AI367247 AI253132 BE464248 T58658 AW207785 T58607  
 R51194 AI732276 R53587 AI820697  
 AK000526 BE550084 W30689 AW271859 AA411456 AI341551 AA242980 AA243027 H87046 D20360 AI184053 AA146956  
 AI721023 AI718944 AA146955 F18215 AA903890 AI700355 AI075430 AA411584 AA878210 AI476760 AW945637 AA630596

		AA431522 AA301989 AI909058 D12149 N41960 BE222214 AA609922 AA828176 AA393359 AA398693 AW024958 BE467805 AW288623 AW264085 AI024454 AI024719 AI431927 T55087 AI611014 T54920 AA131253 AI436344 AA017176 AI359979 AA047836 AA017063 AA016303 AA001545 AA063315 AA063316 AF015910 AA305746 D90187 T63943 AW951154 T29182 AI734941 D13264 AI299239 Z18812 AW299859 W24476 AA933064 AA489759 AW888554 AW607282 AA318986 M28590 M55405 AW752552 AA326895 M10036 NM_000365 N84665 H69414 N84657 AA380453 AA329743 AA357367 AA188770 AA376532 AA353653 AA158963 AA083176 BE537313 AA181433 D53373 R57376 AA206698 R14807 H18899 H11191 H93892 R25593 T61134 N93285 AA083081 AA831789 H13137 AA497014 AA079330 AA182861 H13138 W47161 R62913 AA687089 AA211112 AA429237 AL035923 AA100070 AW392898 AI566433 AA866006 AA214002 AW392865 N79454 AA1877181 AI680371 AA176501 AA737967 AI089225 F34874 AW571437 AI620620 AA573489 AA423816 AA164917 AA458455 T47072 AI569087 AI261656 AA730919 AI833441 AW195182 AI351622 AW243465 AI872649 AI359227 AA987941 AI693770 T47073 AW779948 AW510580 AI635626 AW627601 AA864326 AA953578 AI341418 BE222853 AI241963 AI094663 AA928380 AA493373 AW043762 AI377783 AW958997 BE619760 AA385240 BE277975 BE280095 AW631443 AA581048 BE618715 BE299610 C14874 BE559858 BE378455 BE618280 BE544585 AI525575 BE548897 BE267110 AA804738 BE269821 AA918133 BE277647 AA599947 BE280735 BE390239 N74150 T12504 AI208197 AW955527 AA113897 N40081 H73835 H70393 AI434041 W22950 AI192661 BE264461 W26486 AA626424 AA196694 T69209 AA857976 AI540287 AA410599 AA864287 AW950564 AA013320 T49283 AI541438 AW804703 AA335534 AA335659 BE562269 BE618802 BE277850 BE548413 BE280994 AA204813 BE561694 BE543524 BE253647 AW001452 W18116 BE542508 AA205894 BE254875 BE270033 AI525906 BE251792 AA975700 BE272138 AW607671 N87686 M10036 BE515060 BE298607 AI745178 U47924 H03193 Z25424 M88357 L29141 M69180 M81105 L33999 U04688 U09806 U12139 T91518 X65561 W38150 U38268 U51010 U67092 N74496 K01160 K03430 AA070473 AA070853 AA075749 AA075716 AA079079 AA128999 M60299 M64358 N27645 M85220 S69265 Y10141 Z26256 T54095 R48295 W38206 GMCSF M22406 M57417 Z11585
5	114427 9724_2	
	114569 110077_1	
	100106 15621_5	
	100515 342_1	
10	100531 46038_1	
	100545 22955_11	
	100574 17320_2	
15		
20		
25	100627 tigr_HT2798	
	100756 tigr_HT3768	
	100768 tigr_HT3846	
	100813 tigr_HT4265	
	100836 tigr_HT4383	
	100855 tigr_HT4504	
30	102104 entrez_U12139	
	125091 genbank_T91518	
	100929 tigr_HT688	
	125147 _entrez_W38150	
35	102354 entrez_U38268	
	102491 entrez_U51010	
	102636 entrez_U67092	
	118769 genbank_N74496	
	101046 entrez_K01160	
	101057 entrez_K03430	
40	108334 genbank_AA070473	
	108417 483241_1	
	108441 genbank_AA079079	
	108786 genbank_AA128999	
45	101655 entrez_M60299	
	101697 entrez_M64358	
	117437 genbank_N27645	
	101798 entrez_M85220	
	101909 entrez_S69265	
	103508 entrez_Y10141	
50	103575 entrez_Z26256	
	118332 genbank_T54095	
	112161 genbank_R48295	
	118584 NOT_FOUND_entrez_W38206	
	114376 NOT_FOUND_entrez_GMCSF	
55	100478 tigr_HT1067	
	100547 tigr_HT2219	
	100564 tigr_HT2324	

**TABLE 12:** shows genes, including expression sequence tags, that are down-regulated in prostate tumor tissue compared to normal prostate tissue as analyzed using Affymetrix/Eos Hu01 GeneChip array. Shown are the ratios of "average" normal prostate to "average" prostate cancer tissues.

10	Pkey:	Unique Eos probeset identifier number		
	ExAccn:	Exemplar Accession number, Genbank accession number		
	UnigeneID:	Unigene number		
	Unigene Title:	Unigene gene title		
	R1:	Background subtracted normal prostate : prostate tumor tissue		
15	Pkey	ExAccn	UnigeneID Unigene Title	R1
	100522	HG1763-HT1780	Prolactin-Induced Protein	17.4
	130803	M81650	Hs.1968 semenogelin I	16.785
	118068	N53943	Hs.13743 ESTs	13.225
20	114251	Z39898	Hs.21948 ESTs	12.7
	112134	R46025	Hs.7413 ESTs	8.735
	101436	M20642	Hs.158295 Human alkali myosin light chain 3 mRNA; complete cds	8.175
	104028	AA361094	Hs.221128 ESTs	8.15
	108944	AA148204	Hs.175783 ESTs; Highly similar to growth arrest inducible gene product [H.sapiens]	7.535
25	103838	AA174173	Hs.12622 ESTs	7.212
	120469	AA251741	Hs.25882 DKFZP586M1824 protein	7.175
	110279	H28231	Hs.27384 ESTs	6.701
	127472	AA761378	Hs.192013 ESTs	6.642
	133301	N35229	Hs.7037 pallid (mouse) homolog; pallidin	6.411
30	102457	U48807	Hs.2359 dual specificity phosphatase 4	6.395
	114011	W90385	Hs.15082 ESTs	6.15
	101249	L33881	Hs.1904 protein kinase C; iota	6
	123265	AA491209	Hs.105265 ESTs; Weakly similar to reverse transcriptase [M.musculus]	6
	119322	T49655	Hs.241569 ESTs; Modly smlr to II ALU SUBFAMILY SQ WARNING ENTRY II [H.sapiens]	5.95
35	101873	M81906	Hs.6241 phosphoinositide-3-kinase; regulatory subunit; polypeptide 1 (p85 alpha)	5.925
	115586	AA399218	Hs.92423 ESTs	5.7
	120590	AA281780	Hs.111441 ESTs; Weakly similar to similar to Kruppel-like zinc finger protein [C.elegans]	5.7
	109748	F10192	Hs.248323 Tubulin; alpha; brain-specific	5.625
	134727	X80507	Hs.8939 yes-associated protein 65 kDa	5.5
40	129171	AA234048	Hs.7753 calumenin	5.486
	120390	AA233122	Hs.111460 ESTs; Highly similar to multifunctional calcium/calmodulin-dependent protein kinase II delta2 isoform [H.sapiens]	5.4
	131699	R68657	Hs.90421 ESTs; Modly smlr to II ALU SUBFAMILY SX WARNING ENTRY II [H.sapiens]	5.279
	104490	N71503	Hs.43087 ESTs; Weakly similar to dysferlin [H.sapiens]	5.266
45	102124	U14528	Hs.29981 solute carrier family 26 (sulfate transporter); member 2	5.151
	109280	AA196635	Hs.86081 ESTs	5.134
	109707	F09739	Hs.185701 Homo sapiens mRNA full length insert cDNA clone EUROIMAGE 21920	5.075
	108087	AA045709	Hs.40545 ESTs	5.075
	135006	M21665	Hs.929 myosin; heavy polypeptide 7; cardiac muscle; beta	5.055
50	110182	R80664	Hs.77067 ESTs	5.033
	129806	R62444	Hs.173373 KIAA0931 protein	4.675
	101435	M20543	Hs.1288 actin; alpha 1; skeletal muscle	4.626
	125954	R93943	yt72c12.r1 Soares retina N2b4HR Homo sapiens cDNA clone IMAGE:275735 5'	4.6
	113989	W87544	Hs.221184 ESTs	4.559
55	104432	J03460	Hs.99949 prolactin-induced protein	4.451
	112326	R56068	Hs.4268 ESTs	4.45
	119063	R16833	Hs.53106 ESTs; Weakly similar to II ALU SUBFAMILY J WARNING ENTRY II [H.sapiens]	4.45
	130376	R40873	Hs.155174 KIAA0432 gene product	4.301
	122484	AA448286	Hs.98074 ESTs; Highly similar to atrophin-1 interacting protein 4 [H.sapiens]	4.2
60	104142	AA447006	ESTs; Moderately similar to II ALU SUBFAMILY SQ WARNING	4.175
	129413	N32787	Hs.11123 ESTs; Moderately similar to hypothetical protein 2 [H.sapiens]	4.1
	103678	Z84483	Human DNA sequence from PAC 46H23, BRCA2 gene region chromosome 13q12-13q.05	4.05
	114266	Z40186	Hs.26409 ESTs	4.05
	115206	AA262491	Hs.186572 ESTs	4.048
65	123723	AA609749	Hs.112759 ESTs; Highly similar to unknown protein [R.norvegicus]	4.041
	129130	H97993	Hs.172788 ESTs; Weakly similar to KIAA0512 protein [H.sapiens]	4.028

	120217	Z41078	Hs.66035	ESTs	4.028
	108536	AA084524		zn18d8.s1 Stratagene neuroepithelium NT2RAM1 937234 Homo sapiens cDNA	4.023
	134460	AA400030	Hs.8360	ESTs; Weakly similar to II ALU CLASS 8 WARNING ENTRY II [H.sapiens]	3.925
	120418	AA236010	Hs.26613	Homo sapiens mRNA; cDNA DKFZp586F1323 (from clone DKFZp586F1323)	3.91
5	132783	N74897	Hs.5683	DEAD/H (Asp-Glu-Ala-Asp/His) box polypeptide 15	3.889
	125052	T80174	Hs.222779	ESTs; Moderately similar to similar to NEDD-4 [H.sapiens]	3.85
	108600	AA099585	Hs.41175	ESTs	3.833
	103099	X61100	Hs.8248	NADH dehydrogenase (ubiquinone) Fe-S protein 1 (75kD) (NADH-coenzyme	3.818
	134948	H06773	Hs.93850	protein kinase; AMP-activated; gamma 2 non-catalytic subunit	3.792
10	120511	AA258144	Hs.221576	ESTs	3.779
	111861	R37460	Hs.25231	ESTs	3.768
	113966	W86600	Hs.9842	ESTs	3.75
	131649	AA481254	Hs.30120	ESTs	3.708
	129775	R94659	Hs.12420	ESTs	3.707
15	110191	H20568	Hs.27182	phospholipase A2-activating protein	3.7
	112678	R87160	Hs.33665	ESTs	3.7
	127115	AA375791	Hs.131894	ESTs	3.674
	132892	W92797	Hs.59378	DKFZP434G162 protein	3.653
	115023	AA252079	Hs.63931	dachshund (Drosophila) homolog	3.625
20	114932	AA242751	Hs.16218	KIAA0903 protein	3.62
	106865	AA487228	Hs.19479	ESTs	3.614
	134480	AA024664	Hs.83916	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex; 5 (13kD; B13)	3.613
	124780	R42493	Hs.220839	ESTs	3.6
	130631	AA025399	Hs.189737	ESTs	3.592
25	134154	AA211320	Hs.79404	neuron-specific protein	3.568
	104160	AA455706	Hs.99722	ESTs; Weakly similar to 78 KD GLUCOSE REGULATED PROTEIN PRECURSOR	3.559
	105524	AA258158	Hs.22153	ESTs; Weakly similar to KIAA0352 [H.sapiens]	3.542
	110168	H19673	Hs.176586	ESTs	3.525
30	109460	AA233289	Hs.72158	ESTs	3.522
	109585	F02367	Hs.27252	ESTs	3.5
	115134	AA257107	Hs.194331	ESTs	3.5
	116083	AA455653	Hs.44581	ESTs; Weakly similar to HEAT SHOCK 70 KD PROTEIN 6 [H.sapiens]	3.459
	120524	AA261852	Hs.192905	ESTs	3.45
35	116932	H74330	Hs.150000	ESTs	3.425
	130748	AA256976	Hs.18800	ESTs; Weakly similar to KIAA0579 protein [H.sapiens]	3.42
	107513	X05451	Hs.158285	Human alkali myosin light chain 3 mRNA; complete cds	3.417
	118641	N70288	Hs.49829	ESTs	3.407
	126584	AI028384	Hs.127331	ESTs	3.399
40	105134	AA159953	Hs.22895	ESTs; Weakly similar to arylsulfatase B precursor [H.sapiens]	3.325
	123502	AA600116	Hs.112526	ESTs	3.318
	132389	N50866	Hs.47135	ESTs	3.317
	105691	AA287097	Hs.75358	transcription factor 4	3.315
	131505	H85897	Hs.27755	ESTs	3.309
45	120775	AA342104	Hs.96777	EST	3.3
	105579	AA278824	Hs.19218	ESTs	3.295
	128190	AA946876	Hs.148376	ESTs	3.282
	100819	HG4020-HT4290		Transglutaminase	3.288
	130217	D29956	Hs.152818	ubiquitin specific protease 8	3.273
50	130068	AA608903	Hs.106220	KIAA0336 gene product	3.269
	134719	L07515	Hs.89232	chromobox homolog 5 (Drosophila HP1 alpha)	3.266
	110277	H29209	Hs.151231	ESTs; Highly similar to FYVE finger-containing phosphoinositide kinase [M.musculus]	3.26
	127354	AA418880	Hs.185797	ESTs	3.212
	129173	R60523	Hs.109087	ESTs	3.197
55	127464	AA970504	Hs.146103	ESTs	3.179
	124923	R94500	Hs.108046	ESTs	3.175
	122465	AA448164	Hs.99153	ESTs; Highly similar to CGI-73 protein [H.sapiens]	3.151
	122027	AA431302	Hs.98721	EST; Weakly similar to N-copine [H.sapiens]	3.151
	103329	X85134	Hs.72984	retinoblastoma-binding protein 5	3.15
60	129937	M95767	Hs.135578	chitinase; di-N-acetyl-	3.15
	134197	AA057341	Hs.87889	helicase-moi	3.15
	107764	AA018219	Hs.226923	ESTs	3.125
	121775	AA421773	Hs.161008	ESTs	3.125
	114768	AA149007	Hs.182339	Ets homologous factor	3.12
65	132381	N48818	Hs.46884	ESTs	3.11
	123105	AA485973	Hs.143947	ESTs	3.104
	121176	AA400080	Hs.97774	ESTs	3.1
	125053	T80620	Hs.186473	ESTs	3.075
	105909	AA401739	Hs.5111	ESTs	3.066

	119767	W72562	Hs.58119	ESTs	3.057
	115776	AA424038	Hs.58197	ESTs	3.056
	111713	R22988	Hs.220950	ESTs	3.05
	115301	AA280047	Hs.43948	ESTs	3.05
5	118448	N66412	Hs.49189	ESTs	3
	106586	AA456598	Hs.256269	ESTs	2.995
	110415	H48239	Hs.29739	ESTs; Weakly similar to RAS-RELATED PROTEIN RAB-3A [H.sapiens]	2.979
	105173	AA182030	Hs.8364	ESTs	2.978
	101102	L07594	Hs.79059	transforming growth factor; beta receptor III (betaglycan; 300kD)	2.978
10	110543	H58383	Hs.258544	ESTs	2.976
	125593	R24464	Hs.202949	KIAA1102 protein	2.964
	100624	HG4058-HT4328		Oncogene Aml1-Evl-1, Fusion Activated	2.957
	106822	AA481068	Hs.31835	ESTs	2.95
	131963	D11930	Hs.3592	ESTs	2.95
15	111221	N68969	Hs.15119	ESTs	2.936
	113620	T93795	Hs.17252	EST	2.917
	105220	AA210695	Hs.17212	ESTs	2.917
	123234	AA490227	Hs.105252	ESTs	2.904
	125250	W87465	Hs.222926	ESTs; Weakly similar to D2092.2 [C.elegans]	2.9
20	116196	AA465160	Hs.63386	ESTs	2.9
	122100	AA432243	Hs.41086	ESTs; Weakly similar to OXYSTEROL-BINDING PROTEIN [H.sapiens]	2.896
	111712	R22905	Hs.113716	ESTs	2.895
	126589	W78107	Hs.187698	ESTs; Weakly similar to Yarl40vp [S.cerevisiae]	2.895
	111132	N64378	Hs.13149	ESTs; Highly similar to unknown function [H.sapiens]	2.894
25	115307	AA280300	Hs.191346	ESTs	2.886
	108989	AA152263	Hs.18827	KIAA0849 protein	2.883
	129486	H03686	Hs.220689	Ras-GTPase-activating protein SH3-domain-binding protein	2.879
	119805	W73788	Hs.43213	ESTs	2.875
	125721	R59881	Hs.7503	ESTs	2.871
30	103704	AA028171	Hs.153688	ESTs	2.868
	128420	AI088155	Hs.14148	ESTs; Weakly similar to unknown [H.sapiens]	2.868
	120571	AA280738	Hs.128679	ESTs	2.863
	123059	AA482019	Hs.238202	EST	2.86
	129462	D84239	Hs.111732	IgG Fc binding protein	2.856
35	125166	W45491	Hs.172609	nucleobindin 1	2.854
	125992	W01626		za36e07.r1 Soares fetal liver spleen 1NfLS Homo sapiens cDNA clone	2.852
	109431	AA227972	Hs.43635	ESTs	2.85
	105077	AA142919	Hs.5558	ESTs	2.847
	131388	R34531	Hs.92200	KIAA0480 gene product	2.846
40	121080	AA398720	Hs.177953	ESTs	2.838
	112575	R73816	Hs.17385	ESTs	2.836
	130244	R26206	Hs.153293	KIAA0701 protein	2.825
	134698	AA427783	Hs.77910	3-hydroxy-3-methylglutaryl-Coenzyme A synthase 1 (soluble)	2.816
	116355	AA504356	Hs.88650	ESTs	2.813
45	115316	AA280627	Hs.57846	ESTs	2.806
	129677	U48736	Hs.198891	serine/threonine-protein kinase PRP4 homolog	2.8
	130971	H20332	Hs.28707	signal sequence receptor; gamma (translocon-associated protein gamma)	2.799
	115054	AA252863	Hs.87729	ESTs	2.795
	130285	AA063546	Hs.202968	ESTs	2.792
50	124308	H93575	Hs.227146	Homo sapiens mRNA; cDNA DKFZp564J142 (from clone DKFZp564J142)	2.783
	125502	AA732329	Hs.191959	ESTs	2.778
	114800	AA159825	Hs.131887	ESTs; Weakly similar to ORF YNL227c [S.cerevisiae]	2.768
	128625	AA242816	Hs.102652	ESTs; Weakly similar to KIAA0437 [H.sapiens]	2.766
	130159	H51098	Hs.151310	PDZ domain protein (Drosophila InaD-like)	2.75
55	107127	AA620504	Hs.22119	ESTs	2.742
	113547	T90746	Hs.15233	ESTs	2.734
	104639	AA004622	Hs.18214	ESTs	2.727
	127609	AA622559	Hs.150318	ESTs	2.726
	106922	AA490984	Hs.10056	ESTs	2.725
60	124825	R52088		yg85c3.s1 Soares infant brain 1NIB Homo sapiens cDNA clone	2.725
	124333	H98683	Hs.154054	ESTs	2.708
	117634	N36421	Hs.107854	ESTs; Weakly similar to SODIUM- AND CHLORIDE-DEPENDENT GLYCINE TRANSP	2.706
	101609	M54927	Hs.1787	proteolipid protein 1 (Pelizaeus-Merzbacher disease; spastic paraplegia 2; uncomplicated)	2.704
65	117142	H96908	Hs.42251	ESTs	2.7
	112602	R79147	Hs.203365	ESTs	2.695
	106828	AA481505	Hs.13797	ESTs	2.68
	124377	N25996	Hs.179833	ESTs	2.675

	101026	J04970	carboxypeptidase M	2.675
	124560	N66393	Hs.102754 ESTs	2.675
	124066	H02494	Hs.101615 ESTs	2.671
5	130281	R12777	Hs.15395 ESTs; Weakly similar to ARGINYL-TRNA SYNTHETASE [H.sapiens]	2.66
	110949	N49602	Hs.13308 ESTs	2.65
	111031	N54839	Hs.221085 ESTs; Highly similar to mediator [H.sapiens]	2.633
	121770	AA421714	Hs.11469 KIAA0896 protein	2.63
	134132	U32519	Hs.220689 Ras-GTPase-activating protein SH3-domain-binding protein	2.626
10	112424	R62452	Hs.191265 ESTs	2.625
	122544	AA451679	Hs.194410 ESTs	2.625
	134425	X90568	Hs.172004 titin	2.624
	111114	N63391	Hs.9238 ESTs	2.619
	118119	AA459242	Hs.44445 ESTs; Weakly similar to Ketch motif containing protein [H.sapiens]	2.615
	112079	R44164	Hs.23014 ESTs	2.6
15	123033	AA481271	Hs.193945 ESTs	2.591
	124196	H52617	Hs.144167 ESTs	2.586
	125873	H14437	y25a04.r1 Soares breast 3NbHBst Homo sapiens cDNA clone	2.58
	117684	N40184	Hs.45050 ESTs	2.575
	134938	D30037	Hs.168326 phosphatidylinositol transfer protein; beta	2.575
20	131822	AA215647	Hs.200332 ESTs	2.568
	135185	U71203	Hs.96038 Ric (Drosophila)-like; expressed in many tissues	2.564
	117690	N40467	Hs.93834 ESTs	2.557
	118807	N78582	Hs.50732 protein kinase; AMP-activated; beta 2 non-catalytic subunit	2.552
	121369	AA405657	Hs.128791 Human DNA sequence from clone 967N21 on chromosome 20p12.3-13. Contains	2.55
25	114860	AA235112	Hs.106227 ESTs; Moderately similar to similar to murine RNA-binding protein [H.sapiens]	2.549
	121857	AA426017	Hs.62694 ESTs; Highly similar to DNA-REPAIR PROTEIN COMPLEMENTING	2.548
	110190	H20560	Hs.244624 ESTs	2.548
	132573	AA045333	Hs.51743 ESTs; Weakly similar to !! ALU SUBFAMILY SB2 WARNING ENTRY !! [H.sapiens]	2.542
	109706	F09729	Hs.12780 ESTs	2.537
30	135109	AA410391	Hs.94592 klotho	2.525
	132810	R37027	Hs.5737 KIAA0475 gene product	2.525
	124879	R73588	Hs.101533 ESTs	2.525
	103840	AA174180	Hs.50932 ESTs	2.525
	119066	R22196	Hs.34492 ESTs	2.519
35	114833	AA234362	Hs.87310 ESTs; Moderately similar to CGI-66 protein [H.sapiens]	2.507
	112998	T23555	Hs.103288 ESTs	2.5
	123312	AA498258	Hs.99801 ESTs	2.499
	121873	AA426270	Hs.145686 splicing factor (CC1.3)	2.491
	123321	AA496884	Hs.23972 ESTs	2.491
40	107760	AA018042	Hs.95078 EST	2.483
	102580	U80809	Hs.152881 CDP-diacylglycerol synthase (phosphatidate cytidylyltransferase) 1	2.481
	103053	X56741	Hs.5947 mal transforming oncogene (derived from cell line NK14)- RAB8 homolog	2.475
	124756	R38100	Hs.106294 ESTs	2.475
	112936	T15665	Hs.6185 ESTs; Weakly similar to BcDNA.GH12174 [D.melanogaster]	2.475
45	125178	W58202	Hs.125731 ESTs	2.475
	112423	R62447	Hs.22123 ESTs	2.471
	123515	AA600323	Hs.112535 EST	2.462
	102842	U95020	Hs.21803 calcium channel; voltage-dependent; beta 4 subunit	2.457
	102400	U42390	Hs.171957 triple functional domain (PTPRF interacting)	2.455
50	113187	T56056	Hs.9992 ESTs	2.452
	131687	L11066	Hs.3069 heat shock 70kD protein 9B (mortalin-2)	2.448
	115314	AA280583	Hs.256501 ESTs	2.437
	128211	AI206427	Hs.166707 ESTs; Highly similar to Ran-binding protein 2 [H.sapiens]	2.43
	134281	L11005	Hs.81047 aldehyde oxidase 1	2.425
55	115985	AA447709	Hs.132094 ESTs; Moderately similar to putative transcription factor CA150 [H.sapiens]	2.425
	111348	N90041	Hs.9585 ESTs	2.418
	129430	AA258842	Hs.197877 Homo sapiens clone 23777 putative transmembrane GTPase mRNA; partial cds	2.418
	133863	C13990	Hs.76930 synuclein; alpha (non A4 component of amyloid precursor)	2.417
	111164	N66857	Hs.14808 ESTs; Weakly similar to !! ALU CLASS C WARNING ENTRY !! [H.sapiens]	2.416
60	132143	AA257056	Hs.7972 KIAA0871 protein	2.412
	130330	M55047	Hs.154679 synaptotagmin 1	2.408
	114219	Z39451	Hs.27389 ESTs	2.406
	117101	H94043	Hs.24341 DKFZP586I1419 protein	2.403
	125433	AA034325	Hs.54320 ESTs	2.4
65	111099	N62506	Hs.211958 ESTs	2.4
	120323	AA195405	Hs.110347 Homo sapiens mRNA for alpha integrin binding protein 80; partial	2.397
	118624	N69998	Hs.21801 ESTs	2.394
	123570	AA608955	Hs.109653 ESTs	2.389
	123562	AA608893	Hs.190065 ESTs	2.388

	131546	AA282821	Hs.28578	muscleblind (Drosophila)-like	2.385
	103143	X66141	Hs.75535	myosin; light polypeptide 2; regulatory; cardiac; slow	2.384
	123645	AA609310	Hs.188691	ESTs	2.383
	130123	AA001835	Hs.150390	zinc finger protein 262	2.379
5	131682	AA428368	Hs.30654	ESTs	2.378
	115909	AA436666	Hs.59761	ESTs	2.375
	125168	W45574	Hs.252497	ESTs	2.372
	123973	C14805	Hs.182151	ESTs	2.361
	135197	U76456		Homo sapiens tissue inhibitor of metalloproteinase 4 mRNA, complete cds	2.357
10	118889	N71545	Hs.184544	ESTs	2.357
	107734	AA016225	Hs.93386	ESTs	2.354
	124590	N69220	Hs.41381	ESTs; Weakly similar to ubiquitin hydrolyzing enzyme I [H.sapiens]	2.35
	111163	N66850	Hs.17606	ESTs	2.348
	112349	R58877	Hs.22665	ESTs; Moderately similar to dJ83L6.1 [H.sapiens]	2.345
15	129076	AA262179	Hs.189343	ESTs	2.345
	134238	R81509	Hs.184571	splicing factor; arginine/serine-rich 11	2.341
	116766	H13260	Hs.95097	ESTs	2.338
	106331	AA436853	Hs.34795	ESTs	2.333
	129003	AA443752	Hs.10784	ESTs	2.332
20	132368	AA599814	Hs.46637	ESTs; Weakly similar to cDNA EST yk289g5.5 comes from this gene [C.elegans]	2.332
	124697	R06273	Hs.186467	ESTs; Modly smir to !! ALU SUBFAMILY J WARNING ENTRY II [H.sapiens]	2.322
	120273	AA176688	Hs.221139	ESTs	2.313
	127110	AA304993	Hs.100861	ESTs; Weakly similar to p60 katanin [H.sapiens]	2.307
	105450	AA252621	Hs.93842	ESTs	2.301
25	119819	W74371	Hs.58383	ESTs	2.297
	102302	U33052	Hs.69171	protein kinase C-like 2	2.288
	130596	N74353	Hs.16475	ESTs	2.282
	114161	Z38904	Hs.22385	ESTs; Weakly similar to KIAA0970 protein [H.sapiens]	2.278
	130542	U64675		Human sperm membrane protein BS-63 mRNA, complete cds	2.277
30	104491	N71513	Hs.39328	ESTs	2.275
	116988	H82527		ys69e12.s1 Soares retina N2b4HR Homo sapiens cDNA clone	2.275
	126823	AA370120	Hs.7870	ESTs; Weakly similar to Yir350wp [S.cerevisiae]	2.273
	108800	AA129731	Hs.90424	ESTs	2.273
35	101310	L41807	Hs.934	glucosaminyl (N-acetyl) transferase 2; H-branching enzyme	2.269
	126842	W19498	Hs.21085	ESTs	2.255
	127251	AA936428	Hs.128638	ESTs	2.251
	124647	N91947	Hs.125033	ESTs	2.249
	127112	AI143906	Hs.125103	ESTs	2.247
40	101973	S82597	Hs.80120	UDP-N-acetyl-alpha-D-galactosamine:polypeptide	2.246
	120999	AA398302	Hs.127437	ESTs	2.245
	130225	AA599583	Hs.15299	HMBA-inducible	2.243
	119980	W88678	Hs.249247	heterogeneous nuclear protein similar to rat helix destabilizing protein	2.243
	124222	H61053	Hs.222844	ESTs	2.24
	129199	H90914	Hs.128629	ESTs	2.236
45	106802	AA479101	Hs.16570	ESTs; Weakly similar to !! ALU SUBFAMILY SQ WARNING ENTRY II [H.sapiens]	2.231
	126160	N90960	Hs.247277	ESTs; Weakly similar to transformation-related protein [H.sapiens]	2.229
	104627	AA001876	Hs.19603	ESTs	2.228
	106474	AA450212	Hs.42484	Homo sapiens mRNA; cDNA DKFZp564C053 (from clone DKFZp564C053)	2.226
50	113096	T40927	Hs.8345	ESTs	2.225
	135336	AA452822	Hs.99027	ESTs	2.225
	135344	R62976	Hs.168491	ESTs; Moderately similar to TRF1-interacting ankyrin-related	2.225
	126156	AA508354	Hs.118448	ESTs; Moderately similar to AKT3 protein kinase [H.sapiens]	2.222
	128885	AA397841	Hs.180141	cofilin 2 (muscle)	2.218
55	107900	AA026385	Hs.176600	ESTs; Moderately similar to !! ALU SUBFAMILY SB2 WARNING	2.217
	114481	AA033562	Hs.151572	ESTs	2.212
	109292	AA189828	Hs.188662	ESTs	2.212
	104257	AF006265	Hs.9222	estrogen receptor-binding fragment-associated gene 9	2.209
	132932	T15482	Hs.6093	ESTs	2.204
60	127392	AA262728	Hs.14896	Homo sapiens clone 24590 mRNA sequence	2.204
	104641	AA004652	Hs.18564	ESTs	2.2
	122529	AA449828	Hs.99229	ESTs	2.195
	124307	H93562	Hs.162395	proline synthetase co-transcribed (bacterial homolog)	2.193
	133601	S95938	Hs.75155	transferrin	2.193
	119904	W85709	Hs.128927	ESTs; Weakly similar to !! ALU SUBFAMILY SP WARNING ENTRY II [H.sapiens]	2.192
65	100348	D64109	Hs.4994	transducer of ERBB2; 2 (TOB2)	2.185
	126871	AA351779	Hs.200334	ESTs	2.18
	127793	AI298835	Hs.30445	ESTs; Weakly similar to transcription regulator Stat-50 [H.sapiens]	2.178
	105149	AA169253	Hs.8958	ESTs	2.177
	121367	AA405648		zw39g8.s1 Soares_total_fetus_Nb2HF8_9w H sapiens cDNA clone IMAGE:772478	2.177

	111836	R36228	Hs.25119	ESTs	2.175
	133394	R16759	Hs.237225	ribosomal protein S5 pseudogene 1	2.175
	123207	AA489697	Hs.145053	ESTs	2.175
	129801	F11087	Hs.239666	ESTs	2.175
5	103393	X94612	Hs.41749	protein kinase; cGMP-dependent; type II	2.161
	132415	AA043223	Hs.4815	nudix (nucleoside diphosphate linked motley X)-type motif 3	2.157
	106369	AA443828	Hs.25324	ESTs	2.157
	122963	AA478446	Hs.69559	KIAA1096 protein	2.156
	133473	M19309	Hs.73980	tropoin T1; skeletal; slow	2.155
10	134257	C06270	Hs.8078	Homo sapiens mRNA; cDNA DKFZp586L081 (from clone DKFZp586L081)	2.155
	135156	AA056012	Hs.9552	binds of Arl Two	2.151
	104055	AA393755	Hs.117211	ESTs; Highly similar to CGI-62 protein [H.sapiens]	2.15
	102313	U33921	HSU33921	Clontech adult lung cDNA library (HL1158a) Homo sapiens cDNA	2.15
	109788	F10638	Hs.12432	Homo sapiens clone 24407 mRNA sequence	2.15
15	103507	Y10032	Hs.159640	serum/glucocorticoid regulated kinase	2.15
	116000	AA448710	Hs.41327	ESTs	2.15
	105858	AA399164	Hs.227676	ESTs; Moderately similar to !! ALU SUBFAMILY SQ	2.137
	103153	X66534	Hs.75295	guanylate cyclase 1; soluble; alpha 3	2.137
	126202	AA652238	Hs.199726	ESTs	2.135
20	115955	AA446121	Hs.44198	Homo sapiens BAC clone RG054D04 from 7q31	2.134
	104164	AA458770	Hs.27023	KIAA0917 protein	2.132
	108692	AA121270	Hs.82960	ESTs	2.128
	122878	AA465341	Hs.99640	ESTs	2.126
	134771	L13939	Hs.89576	adaptor-related protein complex 1; beta 1 subunit	2.125
25	104298	D31120	Hs.40368	adaptor-related protein complex 1; sigma 2 subunit	2.125
	104840	AA039595	Hs.42458	Homo sapiens mRNA; cDNA DKFZp586C1817 (from clone DKFZp586C1817)	2.125
	122180	AA435788	Hs.98835	ESTs; Moderately similar to putative ring zinc finger protein	2.125
	131012	H01992	Hs.202849	KIAA1102 protein	2.125
	134092	H17490	Hs.7905	ESTs; Highly similar to sorting nexin 9 [H.sapiens]	2.123
30	118617	N69666	Hs.183413	ESTs; Modtly smlr to !! ALU SUBFAMILY J WARNING ENTRY !! [H.sapiens]	2.123
	107155	AA621202	Hs.7946	DKFZP586D1519 protein	2.12
	130925	N71935	Hs.169378	multiple PDZ domain protein	2.12
	135167	U63717	Hs.95821	osteoclast stimulating factor 1	2.118
	105952	AA405263	Hs.181400	ESTs	2.109
35	110308	H38148	Hs.32775	ESTs	2.108
	116368	AA521186	Hs.94217	ESTs	2.107
	132939	U76189	Hs.61152	exostoses (multiple)-like 2	2.102
	117881	N50073	Hs.84926	ESTs; Highly similar to B-IND1 protein [M.musculus]	2.1
	121723	AA419622	Hs.104800	ESTs; Weakly similar to Mouse 19.5 mRNA; complete cds [M.musculus]	2.096
40	103500	Y09443	Hs.22580	alkylglycerone phosphate synthase	2.094
	121429	AA406293	Hs.193498	ESTs	2.093
	134632	AA398710	Hs.174139	chloride channel 3	2.091
	129785	F10980	Hs.184780	ESTs	2.09
	111065	N58193	Hs.18740	ESTs; Weakly similar to 1-evidence	2.089
45	114710	AA129931	Hs.79081	protein phosphatase 1; catalytic subunit; gamma isoform	2.083
	132711	N73702	Hs.238927	ESTs	2.083
	133377	R05490	Hs.7239	SEC24 (S. cerevisiae) related gene family; member B	2.079
	124773	R40923	Hs.106604	ESTs	2.078
	117759	N47587	Hs.97345	ESTs; Weakly similar to TROPOMODULIN [H.sapiens]	2.076
50	127386	AI457411	Hs.106728	ESTs	2.076
	101167	L15309	Hs.193677	zinc finger protein 141 (clone pHZ-44)	2.075
	109597	F02582	Hs.14474	ESTs	2.074
	124390	N29325	Hs.7535	ESTs; Highly similar to COBW-like placental protein [H.sapiens]	2.07
	116225	AA478609	Hs.47278	Human Chromosome 16 BAC clone CIT987SK-A-735G6	2.07
55	131243	R16667	Hs.24752	spectrin SH3 domain binding protein 1	2.069
	130557	T90830	Hs.15981	ESTs; Weakly similar to line-1 protein ORF2 [H.sapiens]	2.067
	134103	D14826	Hs.155924	cAMP responsive element modulator	2.064
	108833	AA131866	Hs.61661	ESTs; Weakly similar to DY3.6 [C.elegans]	2.063
	112286	R53765	Hs.158135	KIAA0981 protein	2.063
60	125624	AA165411	zq49a01.r1	Stratagene hNT neuron (#937233) Homo sapiens cDNA clone	2.061
	124612	N72200	Hs.13913	ESTs	2.058
	116335	AA495830	Hs.87013	ESTs	2.057
	112248	R51381	Hs.23423	ESTs	2.056
	115789	AA424754	Hs.43149	ESTs	2.056
65	107029	AA599219	Hs.187492	ESTs; Weakly similar to ALR [H.sapiens]	2.056
	110294	H30270	Hs.165062	ESTs	2.054
	120532	AA262354	Hs.186648	ESTs	2.054
	118180	N59249	Hs.48349	ESTs	2.052
	132018	AA263194	Hs.3737	ESTs	2.052



	132617	AA171913	Hs.5338	carbonic anhydrase XII	2.05
	131526	N38167	Hs.28274	ESTs	2.05
	113254	T64438	Hs.11449	DKFZP564O123 protein	2.05
	122785	AA459978	Hs.99508	ESTs	2.05
5	107203	D20426	Hs.5656	EST	2.05
	105713	AA291321	Hs.184319	ESTs; Moderately similar to KIAA1006 protein [H.sapiens]	2.046
	129385	D82675	Hs.110950	Homo sapiens clone 25007 mRNA sequence	2.042
	119116	R43845	Hs.64595	DKFZP566E2346 protein	2.04
	116405	AA600253	Hs.55601	ESTs; Highly similar to host cell factor 2 [H.sapiens]	2.04
10	125924	AA526849	Hs.82109	syndecan 1	2.039
	105599	AA279442	Hs.143460	protein kinase C; nu	2.037
	119741	W70205	Hs.43670	kinesin family member 3A	2.037
	101449	M21494	Hs.118843	creatine kinase; muscle	2.036
	107109	AA609943	Hs.32793	ESTs	2.034
15	117040	H89112		yw25e5.s1 Morton Fetal Cochlea Homo sapiens cDNA clone IMAGE:25328	2.034
	132906	AA142857	Hs.234896	ESTs; Highly similar to geminin [H.sapiens]	2.031
	105479	AA255546	Hs.23467	ESTs	2.027
	102031	U04898	Hs.2156	RAR-related orphan receptor A	2.027
	119846	W80363	Hs.58446	ESTs	2.024
20	124809	R46482	Hs.106875	ESTs	2.024
	130286	AA041548	Hs.154023	KIAA0573 protein	2.023
	124457	N50114	Hs.128704	ESTs	2.017
	125144	W37999	Hs.24336	ESTs	2.017
	120581	AA281257	Hs.125868	ESTs	2.014
25	104931	AA062731	Hs.108319	thyroid hormone receptor-associated protein; 150 kDa subunit	2.012
	120548	AA278846	Hs.187634	ESTs	2.011
	113933	W81362	Hs.30567	ESTs	2.011
	123072	AA485041	Hs.104308	ESTs	2.009
	123848	AA609323	Hs.112689	ESTs	2.008
30	116875	H67749	Hs.161022	EST	2.003
	103179	X69398	Hs.82685	CD47 antigen (Rh-related antigen; integrin-associated signal transducer)	1.995
	103478	Y07755	Hs.38991	S100 calcium-binding protein A2	1.995
	111007	N53378	Hs.22543	ESTs	1.995
	120470	AA251797		zs1113.s1 NCL_CGAP_GCB1 Homo sapiens cDNA clone	1.989
35	112280	R53457	Hs.26040	ESTs; Weakly similar to fatty acid omega-hydroxylase [H.sapiens]	1.989
	114127	Z38652	Hs.106991	ESTs; Weakly similar to TYL [H.sapiens]	1.988
	129863	AA151005	Hs.129872	sperm surface protein	1.988
	106320	AA436608		ESTs	1.988
	108933	AA147224	Hs.71814	ESTs	1.986
40	105906	AA401633	Hs.22380	ESTs	1.982
	109029	AA157911	Hs.72200	ESTs	1.982
	118470	N66769	Hs.82781	ESTs	1.975
	115358	AA281886	Hs.88923	ESTs	1.975
	115257	AA278060	Hs.193516	B-cell CLL/lymphoma 10	1.974
45	126879	AA719776		zh38g04.s1 Soares_pineal_gland_N3HPG Homo sapiens cDNA clone IMAGE:414390	1.974
	109547	F01479	Hs.26956	ESTs	1.973
	127111	AA805726	Hs.220509	ESTs	1.969
	101266	L36645	Hs.73964	EphA4	1.966
	129319	AA037467	Hs.30340	ESTs	1.965
50	106211	AA428240	Hs.126083	ESTs	1.962
	112753	R93696	Hs.169882	ESTs	1.961
	120489	AA255538	Hs.190504	ESTs	1.959
	129699	AA458578	Hs.12017	KIAA0439 protein; homolog of yeast ubiquitin-protein ligase Rsp5	1.956
	105425	AA251129	Hs.24416	ESTs	1.953
55	134740	L37362	Hs.89455	opioid receptor; kappa 1	1.95
	109324	AA210700	Hs.86405	Homo sapiens mRNA; cDNA DKFZp564P056 (from clone DKFZp564P056)	1.95
	124303	H93043	Hs.107070	ESTs	1.95
	102337	U36922		Human fork head domain protein (FKHR) mRNA, 3' end	1.948
	109441	AA228100	Hs.86998	nuclear factor of activated T-cells 5	1.946
60	127364	AA179573	Hs.90061	progesterone binding protein	1.942
	105255	AA227498	Hs.3623	ESTs	1.942
	130672	L19783	Hs.177	phosphatidylinositol glycan; class H	1.942
	104301	D45332	Hs.6783	ESTs	1.94
	132442	R62589	Hs.167419	ESTs	1.939
65	105519	AA258063	Hs.23438	ESTs	1.937
	132902	AA490969	Hs.168147	ESTs	1.936
	118873	N89881	Hs.44577	ESTs	1.936
	114124	Z38595	Hs.125019	ESTs; Highly similar to KIAA0886 protein [H.sapiens]	1.934
	115075	AA255486	Hs.88045	ESTs	1.933

	110695	H83483	Hs.124777	ESTs	1.931
	105360	AA236209	Hs.187626	ESTs	1.931
	124998	T56013	Hs.77910	3-hydroxy-3-methylglutaryl-Coenzyme A synthase 1 (soluble)	1.929
	121818	AA424814	Hs.187509	ESTs	1.927
5	111717	R23241	Hs.110776	STAT induced STAT inhibitor-2	1.925
	128874	H06245	Hs.106801	ESTs	1.925
	109391	AA219699	Hs.184245	KIAA0929 protein Mx2 interacting nuclear target (MINT) homolog	1.913
	126129	H82185	Hs.40334	ESTs	1.911
	115553	AA389027	Hs.71414	ESTs	1.905
10	113811	W44928	Hs.4878	ESTs	1.905
	108345	AA070906		zm66d1.s1 Stratagene neuroepithelium (#937231) Homo sapiens cDNA clone	1.904
	120472	AA251875	Hs.104472	ESTs; Weakly similar to Gag-Pol polypeptide [M.musculus]	1.903
	116602	D80063	Hs.241673	EST	1.901
	121121	AA399371	Hs.189085	ESTs; Weakly similar to zinc finger protein SALL1 [H.sapiens]	1.9
15	125330	AA401804	Hs.114574	ESTs	1.896
	130095	F01831	Hs.14838	ESTs	1.894
	119782	W72982	Hs.58282	ESTs	1.894
	104115	AA428090	Hs.26102	ESTs	1.893
	131313	C17938	Hs.22370	Homo sapiens mRNA; cDNA DKFZp564O0122 (from clone DKFZp564O0122)	1.891
20	105583	AA278907	Hs.24549	ESTs	1.891
	122825	AA461195	Hs.99580	ESTs	1.887
	119495	W35390	Hs.55533	ESTs	1.886
	130309	AA134289	Hs.15423	Homo sapiens BAC clone RG114B19 from 7q31.1	1.886
	125628	AA418069	Hs.241493	natural killer-tumor recognition sequence	1.886
25	110811	H66947	Hs.14671	ESTs; Highly similar to gene ERCC5 protein [H.sapiens]	1.885
	117301	N22589	Hs.43215	ESTs	1.884
	131406	N92239	Hs.26471	Wnt inhibitory factor-1	1.881
	126428	AA013312	Hs.64988	ESTs	1.881
30	120285	AA182882	Hs.111110	titin-cap (telethonin)	1.878
	112724	R91753	Hs.17757	ESTs	1.878
	103121	X63679	Hs.4147	translocating chain-associating membrane protein	1.875
	124381	N26765	Hs.109008	ESTs	1.875
	117226	N20468	Hs.177322	ESTs; Weakly similar to putative p150 [H.sapiens]	1.875
	105610	AA278991	Hs.124691	ESTs; Weakly similar to trithorax homologue 2 [H.sapiens]	1.875
35	111229	N69113	Hs.110855	ESTs	1.875
	120627	AA285079	Hs.190474	ESTs	1.873
	107048	AA600012	Hs.10669	ESTs; Moderately similar to KIAA0400 [H.sapiens]	1.872
	104041	AA381902	Hs.197114	RNA binding protein	1.872
	115162	AA258366	Hs.227806	ras GTPase activating protein-like	1.872
40	102239	U26726	Hs.1376	hydroxysteroid (11-beta) dehydrogenase 2	1.87
	100043	M10098		AFFX control: 18S ribosomal RNA	1.868
	120286	AA191353	Hs.22385	ESTs; Weakly similar to KIAA0970 protein [H.sapiens]	1.867
	129011	S72869	Hs.107932	DNA segment; single copy; probe pH4 (transforming sequence; thyroid-1;	1.867
	134851	R44479	Hs.90232	KIAA0552 gene product	1.866
45	117382	N26175	Hs.93405	ESTs	1.864
	114530	AA053027	Hs.191797	ESTs	1.863
	123541	AA608794	Hs.112592	ESTs	1.863
	124890	F78618	Hs.34145	ESTs; Weakly similar to RAS-RELATED PROTEIN RAB-8 [H.sapiens]	1.862
	105289	AA233511	Hs.194720	ATP-binding cassette; sub-family G (WHITE); member 2	1.861
50	103560	Z20656	Hs.182787	myosin; heavy polypept 6; cardiac muscle; alpha (cardiomyopathy; hypertrophic 1)	1.861
	113073	T33637	Hs.6841	ESTs	1.86
	120407	AA235040	Hs.107283	ESTs	1.859
	103892	AA243523	Hs.17155	ESTs	1.858
	123795	AA620381	Hs.70488	ESTs	1.857
55	108524	AA084323	Hs.68138	ESTs	1.857
	113953	W85812	Hs.187554	ESTs	1.856
	110721	H97678	Hs.31319	ESTs	1.856
	129426	AA412087	Hs.168272	EST; Highly smir to prot inhibitor of activated STAT prot PIASx-alpha [H.sapiens]	1.853
	112102	R44840	Hs.21303	ESTs	1.852
60	118502	N67317	Hs.50150	ESTs	1.852
	107619	AA004955	Hs.60015	ESTs	1.851
	100436	D87446	Hs.75912	KIAA0257 protein	1.85
	120652	AA287312	Hs.191648	ESTs	1.85
	121643	AA417078	Hs.193787	ESTs	1.843
65	117387	N26011	Hs.53810	ESTs	1.843
	132084	Y12394	Hs.3886	karyopherin alpha 3 (importin alpha 4)	1.843
	124449	N48593	Hs.121820	ESTs	1.841
	120263	AA173440	Hs.193919	ESTs	1.838
	127226	AA731036	Hs.3463	ribosomal protein S23	1.838

	111837	R36447	Hs.24453	ESTs	1.835
	128727	M64174	Hs.50651	Janus kinase 1 (a protein tyrosine kinase)	1.834
	114439	AA018937	Hs.128629	ESTs	1.833
	102332	U35637		Human nebulin mRNA, partial cds	1.83
5	126579	W72979	Hs.146082	ESTs	1.83
	102341	U37122	Hs.8110	adducin 3 (gamma)	1.83
	114246	Z39848	Hs.12079	ESTs	1.828
	131757	D17532	Hs.316	DEAD/H (Asp-Glu-Ala-Asp/His) box polypeptide 6 (RNA helicase; 54kD)	1.823
	108904	AA136521	Hs.71148	ESTs; Weakly similar to putative p150 [H.sapiens]	1.823
10	115084	AA255566	Hs.42484	Homo sapiens mRNA; cDNA DKFZp564C053 (from clone DKFZp564C053)	1.823
	131957	AA609008	Hs.183232	ESTs	1.822
	100131	D12485	Hs.11951	phosphodiesterase I/nucleotide pyrophosphatase 1 (homologous to mouse Ly-41 antigen)	1.822
	124163	H30539	Hs.189838	ESTs	1.821
15	118204	N59859	Hs.48443	ESTs	1.821
	107727	AA018021	Hs.173091	DKFZP434K151 protein	1.82
	100357	D78156	Hs.241548	RAS p21 protein activator 2	1.82
	116295	AA489016	Hs.91216	ESTs; Highly similar to partial CDS; human putative tumor suppressor [H.sapiens]	1.82
	124833	R54112	Hs.128697	ESTs	1.817
20	122587	AA453255	Hs.6968	ESTs	1.817
	114359	Z41589	Hs.153483	ESTs; Moderately similar to H1 chloride channel [H.sapiens]	1.815
	111289	N72253	Hs.238246	ESTs	1.813
	110826	N30068	Hs.15347	ESTs	1.812
	104106	AA422123	Hs.42457	ESTs	1.811
25	130043	AA055404	Hs.193953	ESTs; Weakly similar to II ALU SUBFAMILY J WARNING ENTRY II [H.sapiens]	1.253
	115864	AA432080	Hs.81200	ESTs	1.81
	129737	AA056140	Hs.122684	ESTs	1.81
	124477	N53158	Hs.102682	ESTs	1.809
	100782	HG3740-HT4010		Basic Transcription Factor 2, 34 Kda Subunit	1.806
30	106101	AA421053	Hs.34395	ESTs	1.806
	115479	AA287596		zs52h09.s1 NCL CGAP_GC81 H sapiens cDNA clone IMAGE:701153	1.804
	116104	AA456635	Hs.78524	ESTs	1.804
	114173	Z39050	Hs.21983	ESTs	1.804
	132632	N59784	Hs.5398	guanine-monophosphate synthetase	1.803
35	119135	R49548	Hs.169681	death effector domain-containing	1.802
	131559	N91087	Hs.28728	ESTs; Weakly similar to F55A12.9 [C.elegans]	1.801
	126922	AA177138	Hs.161671	ESTs	1.8
	117375	N25427	Hs.108812	ESTs	1.8
	103571	Z25535	Hs.211608	nucleoporin 153kD	1.8
40	105978	AA406367	Hs.15973	ESTs	1.8
	125904	H22372	Hs.163586	ESTs	1.789
	133883	AA397915	Hs.77221	choline kinase	1.788
	105777	AA348412	Hs.23096	ESTs	1.787
	110166	H19480	Hs.174309	ESTs	1.786
45	105038	AA130273	Hs.7584	ESTs; Weakly similar to hypothetical protein; similar to [H.sapiens]	1.798
	105427	AA251330	Hs.28248	ESTs	1.795
	115278	AA279757	Hs.67466	ESTs; Weakly similar to BACN32G11.d [D.melanogaster]	1.794
	133104	L13698	Hs.65029	growth arrest-specific 1	1.794
	131170	N48674	Hs.23796	Human DNA sequence from clone 1052M9 on chromosome Xq25. Contains the	1.792
50	100136	D13540	Hs.22868	protein tyrosine phosphatase; non-receptor type 11	1.791
	127263	AA331157		EST35035 Embryo, 6 week, subtracted (total cDNA) I Homo sapiens cDNA	1.79
	114157	Z38878	Hs.24979	ESTs	1.79
	125601	AI096717	Hs.247043	KIAA0525 protein	1.788
	118472	N66818	Hs.42179	ESTs	1.787
55	112456	R63925	Hs.28464	ESTs	1.787
	130236	N69682	Hs.51957	SC35-interacting protein 1	1.786
	133297	AA600057	Hs.70266	KIAA0905 protein	1.784
	125650	R40096	Hs.176578	ESTs	1.784
	132056	T89388	Hs.38176	KIAA0606 protein; SCN Circadian Oscillatory Protein (SCOP)	1.783
60	129093	AA262710	Hs.108614	KIAA0627 protein	1.783
	123176	AA489020	Hs.193424	ESTs	1.782
	106340	AA441792	Hs.22857	chord domain-containing protein 1	1.781
	100598	HG2463-HT2559		Guanine Nucleotide-Binding Protein G25k	1.779
	104038	AA374532		EST86676 HSC172 cells I Homo sapiens cDNA 5' end, mRNA sequence	1.778
65	122235	AA436475	Hs.190104	ESTs	1.777
	105104	AA151771	Hs.76941	ATPase; Na+/K+ transporting; beta 3 polypeptide	1.776
	107601	AA004638	Hs.50223	ESTs	1.776
	131467	W68255	Hs.27194	DKFZP434K171 protein	1.776
	118449	N68413	Hs.172466	ESTs; Weakly similar to KIAA0775 protein [H.sapiens]	1.776

	107969	AA034030	Hs.155212	methyilmalonyl Coenzyme A mutase	1.775
	115527	AA342079	Hs.252055	ESTs	1.775
	132471	T16305	Hs.49349	beta-site APP-cleaving enzyme	1.775
	105966	AA406105	Hs.5344	adaptor-related protein complex 1; gamma 1 subunit	1.774
5	127548	AA373091	Hs.93832	Homo sapiens clone 24483 unknown mRNA; partial cds	1.774
	108217	AA428379	Hs.24870	ESTs	1.773
	131214	N28777	Hs.172835	ESTs	1.773
	106295	AA435664	Hs.8583	similar to APOBEC1	1.773
10	106328	AA436705	Hs.28020	KIAA0766 gene product	1.772
	124661	N93797	Hs.3090	EphB1	1.772
	122988	AA479166	Hs.105633	ESTs	1.772
	115504	AA291946	Hs.42736	ESTs	1.771
	105168	AA180208	Hs.16606	ESTs; Highly similar to CGI-32 protein [H.sapiens]	1.767
15	129153	AA188618	Hs.181461	ariadne; Drosophila; homolog of	1.766
	105829	AA398290	Hs.21965	ESTs	1.764
	101811	M86917	Hs.24734	oxysterol binding protein	1.764
	100138	D13628	Hs.2463	angiotensin 1	1.764
	124704	R07335		ye96c1.s1 Soares fetal liver spleen 1NFLS Homo sapiens cDNA clone	1.763
20	122314	AA442257	Hs.192076	ESTs	1.762
	109865	H02566	Hs.191268	Homo sapiens mRNA; cDNA DKFZp434N174 (from clone DKFZp434N174)	1.761
	106206	AA428069	Hs.89519	KIAA1046 protein	1.758
	107135	AA620782	Hs.23247	ESTs	1.757
	105760	AA338960	Hs.26170	ESTs	1.756
25	106288	AA435536	Hs.24336	ESTs	1.756
	103968	AA304566	Hs.3542	ESTs	1.756
	128559	AA234945	Hs.11360	ESTs	1.756
	117885	N50112	Hs.47023	ESTs	1.754
	107032	AA599472	Hs.247309	succinate-CoA ligase; GDP-forming; beta subunit	1.754
30	124807	R45963	Hs.233811	ESTs; Weakly similar to ORF2 [M.musculus]	1.753
	100276	D42047	Hs.82432	KIAA0089 protein	1.753
	110924	N47938		yy84a09.s1 Soares_multiple_sclerosis_2NbHMSP Homo sapiens cDNA clone	1.751
	133002	AF006082	Hs.62461	ARP2 (actin-related protein 2; yeast) homolog	1.751
	132530	AA455917	Hs.50785	SEC22; vesicle trafficking protein (S. cerevisiae)-like 1	1.75
35	110759	N21671	Hs.19025	ESTs	1.75
	106138	AA424515	Hs.33264	ESTs	1.75
	107348	U43701	Hs.184776	ribosomal protein L23a	1.75
	115867	AA432162	Hs.165986	DKFZP586B2022 protein	1.749
	135398	AA184075	Hs.99908	nuclear receptor coactivator 4	1.747
40	113783	W19222	Hs.7041	ESTs; Weakly similar to II ALU SUBFAMILY SQ WARNING ENTRY II [H.sapiens]	1.747
	134898	X98330	Hs.90821	ryanodine receptor 2 (cardiac)	1.745
	132215	T10132	Hs.4236	KIAA0478 gene product	1.744
	104229	AB002346	Hs.61289	synaptotagmin 2	1.743
	116166	AA461558	Hs.202949	KIAA1102 protein	1.743
45	115433	AA284252	Hs.58372	ESTs	1.743
	114908	AA236545	Hs.54973	ESTs	1.742
	127425	AA470941	Hs.143162	ESTs	1.741
	131089	Z38807	Hs.22870	ESTs	1.739
	113498	T88908	Hs.189746	ESTs	1.738
50	116710	F10577	Hs.70312	ESTs	1.735
	127210	R51478		yg76f04.r1 Soares infant brain 1NIB Homo sapiens cDNA clone	1.733
	120554	AA279654	Hs.194524	ESTs	1.733
	129940	U18242	Hs.13572	calcium modulating ligand	1.732
	117023	H88157	Hs.41105	ESTs	1.731
55	111700	R22212	Hs.23361	ESTs	1.731
	116911	H72240	Hs.39292	ESTs; Moderately similar to KIAA0745 protein [H.sapiens]	1.731
	106025	AA412063	Hs.6065	ESTs	1.728
	108626	AA101984	Hs.61697	G-protein coupled receptor	1.726
	111614	R12581	Hs.191146	ESTs	1.726
60	134134	L76703	Hs.173328	protein phosphatase 2; regulatory subunit B (B56); epsilon isoform	1.725
	106886	AA489086	Hs.36545	ESTs	1.725
	117988	N52136	Hs.93828	ESTs	1.725
	121204	AA400422	Hs.55896	ESTs	1.725
	121342	AA404995	Hs.192480	ESTs	1.725
	131129	R27296	Hs.23240	ESTs	1.725
65	116235	AA479181	Hs.186726	ESTs	1.725
	102423	U44754	Hs.179312	small nuclear RNA activating complex; polypeptide 1; 43kD	1.724
	110273	H29050	Hs.24096	ESTs	1.722
	108758	AA127395	Hs.222414	ESTs	1.722
	110672	H88477	Hs.191178	ESTs	1.721

	120271	AA176404	Hs.111092	ESTs; Weakly similar to ZINC FINGER PROTEIN 136 [H.sapiens]	1.72
	100227	D28915	Hs.82316	interferon-induced; hepatitis C-associated microtubular aggregate prot (44kD)	1.719
	129232	W69459	Hs.109655	sex comb on midleg (Drosophila)-like 1	1.719
	134663	W73367	Hs.8750	ESTs	1.717
5	104902	AA055475	Hs.104143	clathrin; light polypeptide (Lca)	1.717
	120582	AA281290	Hs.125287	ESTs; Weakly similar to BC331191_1 [H.sapiens]	1.717
	134891	F03517	Hs.90787	ESTs	1.716
	106219	AA428567	Hs.26613	Homo sapiens mRNA; cDNA DKFZp586F1323 (from clone DKFZp586F1323)	1.715
	116372	AA521311	Hs.13854	ESTs	1.713
10	107570	AA001870	Hs.237323	N-acetylglucosamine-phosphate mutase; DKFZP434B187 protein	1.713
	106198	AA427816	Hs.11803	ESTs	1.712
	125136	W31479	Hs.129051	ESTs	1.712
	104973	AA085676	Hs.6763	KIAA0942 protein	1.712
	128710	J04813	Hs.104117	cytochrome P450; subfamily IIIA (naphedipine oxidase); polypeptide 5	1.711
15	123994	D20899	Hs.107127	Homo sapiens mRNA; cDNA DKFZp564G022 (from clone DKFZp564G022)	1.711
	127871	AA766511	Hs.128848	ESTs	1.71
	116089	AA455933	Hs.41324	ESTs	1.709
	123337	AA504153	Hs.132797	ESTs; Weakly similar to ORF YGL050w [S.cerevisiae]	1.708
	123619	AA609200	Hs.162686	ESTs	1.708
20	104781	AA026617	Hs.21610	ESTs; Highly similar to BAI1-associated protein 1 [H.sapiens]	1.707
	115114	AA256468	Hs.88148	ESTs	1.705
	117852	N49408	Hs.136102	KIAA0853 protein	1.705
	127644	T57570	Hs.77039	ribosomal protein S3A	1.704
	111359	N91273	Hs.27179	ESTs	1.702
25	131721	L36844	Hs.31092	EphA5	1.7
	132438	F08925	Hs.48810	ESTs	1.7
	132476	N67192	Hs.49476	Homo sapiens clone TUA8 Cri-du-chat region mRNA	1.7
	130990	F02488	Hs.21917	KIAA0768 protein	1.7
	128499	AA487503	Hs.100636	ESTs	1.698
30	120780	AA342337	Hs.241569	ESTs; Modtly smir to II ALU SUBFAMILY SQ WARNING ENTRY II [H.sapiens]	1.697
	132920	L06133	Hs.606	ATPase; Cu++ transporting; alpha polypeptide (Menkes syndrome)	1.696
	135037	U77848	Hs.184122	general transcription factor II; i	1.696
	110024	H11297	Hs.31050	ESTs	1.695
	134415	AA329274	Hs.82911	protein tyrosine phosphatase type IVA; member 2	1.694
35	102223	U24685	Hs.148226	Human anti-B cell autoantibody IgM heavy chain variable V-D-J region (VH4) gene; clone E11; VH4-63 non-productive rearrangement	1.694
	126712	AA205862	Hs.7942	ESTs	1.694
	101507	M27492	Hs.82112	interleukin 1 receptor; type I	1.692
	106291	AA435551	Hs.30824	ESTs	1.691
40	116826	H58691	Hs.8215	ESTs; Weakly similar to double-stranded RNA-binding nuclear protein DR5BP76 [H.sapiens]	1.69
	135339	D59269	Hs.127842	Homo sapiens mRNA full length insert cDNA clone EUROIMAGE 783648	1.69
	118250	N62602		yz75b6.s1 Soares_multiple_sclerosis_2NbHMSP Homo sapiens cDNA clone IMAGE:288851 3' similar to contains Alu repetitive element, mRNA sequence	1.689
45	106470	AA450116	Hs.188180	ESTs	1.688
	108203	AA057678	Hs.63408	ESTs	1.687
	118748	W70313	Hs.126906	ESTs	1.686
	116576	D51228	Hs.79404	neuron-specific protein	1.683
	123035	AA481392	Hs.105166	ESTs	1.683
50	126668	AA011616	Hs.184086	ESTs	1.681
	101512	M28209	Hs.250716	RAB1; member RAS oncogene family	1.678
	102704	U76638	Hs.54089	BRCA1 associated RING domain 1	1.677
	126218	AA256386	Hs.13649	Novel human gene mapping to chromosome 13; similar to rat RhoGAP	1.676
	111180	N67277	Hs.9403	ESTs	1.676
55	105937	AA404342	Hs.173531	ESTs	1.675
	114118	Z38520	Hs.175930	ESTs	1.675
	109203	AA190634	Hs.108787	endoplasmic reticulum membrane protein	1.675
	125245	W86608	Hs.7243	ubiquitin specific protease 24	1.675
	102906	X06956	Hs.75318	tubulin; alpha 1 (tastis specific)	1.675
60	125914	AA262825	Hs.180034	cleavage stimulation factor; 3' pre-RNA; subunit 3; 77kD	1.674
	134294	U63289	Hs.81248	CUG triplet repeat; RNA-binding protein 1	1.674
	109742	F10108	Hs.183333	ESTs	1.673
	134674	D63876	Hs.87726	KIAA0154 protein	1.673
	104079	AA402837	Hs.103238	ESTs	1.671
65	107554	AA001386	Hs.59844	ESTs	1.671
	132439	AA243139	Hs.4863	Homo sapiens clone 25088 mRNA sequence	1.669
	124515	N58172	Hs.109370	ESTs	1.668
	124300	H92575	Hs.105959	ESTs; Weakly similar to II ALU SUBFAMILY SQ WARNING ENTRY II [H.sapiens]	1.668
	126809	AA743475	Hs.171693	ESTs	1.667

	106095	AA419547	Hs.11713	ESTs	1.664
	101754	M77142	Hs.239489	TIA1 cytotoxic granule-associated RNA-binding protein	1.663
	105188	AA192306	Hs.23926	ESTs	1.663
	113582	T91371	Hs.16824	EST	1.661
5	119559	W38197		Accession not listed in Genbank	1.661
	119981	W87535	Hs.59015	ring finger protein 9	1.657
	123255	AA480890	Hs.105273	ESTs	1.657
	111078	N59230	Hs.186574	ESTs	1.655
	113082	T40528	Hs.8246	ESTs	1.654
10	119589	W44692	Hs.124177	ESTs	1.652
	104308	D53639	Hs.77904	ribosomal protein S26	1.65
	103073	X59417	Hs.74077	proteasome (prosome; macropain) subunit; alpha type; 6	1.65
	124424	N35314	Hs.107265	ESTs	1.65
15	128890	AA096157	Hs.182364	ESTs; Weakly similar to 25 kDa trypsin inhibitor [H.sapiens]	1.65
	119400	T92767		ye27d06.s1 Stratagene lung (#937210) Homo sapiens cDNA clone IMAGE:118955 3', mRNA sequence.	1.65
	131631	AA486868	Hs.29802	slit (Drosophila) homolog 2	1.65
	118229	N82339	Hs.180532	heat shock 90kD protein 1; alpha	1.649
	118533	N67954	Hs.49413	ESTs	1.648
20	130666	AA476307	Hs.194035	KIAA0737 gene product	1.647
	130393	X60708	Hs.44826	dipeptidylpeptidase IV (CD26; adenosine deaminase complexing protein 2)	1.647
	128667	U69140	Hs.103419	fasciculation and elongation protein zeta 2 (zyglin II)	1.646
	112933	T15530	Hs.221439	ESTs	1.646
	114546	AA056263	Hs.132747	ESTs	1.645
25	126705	AA579377	Hs.180532	heat shock 90kD protein 1; alpha	1.644
	114399	AA007595	Hs.220937	ESTs	1.642
	118836	N79820	Hs.50854	ESTs	1.64
	100401	D85423		Homo sapiens mRNA for Cdc5, partial cds	1.64
30	105681	AA284865	Hs.171228	KIAA1040 protein	1.639
	132526	AA460128	Hs.5074	similar to S. pombe dim1+	1.639
	133809	AA034002	Hs.76359	catalase	1.639
	115968	AA447083	Hs.134522	ESTs	1.637
	116370	AA521256	Hs.236204	ESTs; Moderately similar to NUCLEAR PORE COMPLEX PROTEIN NUP107 [R.norvegicus]	1.631
35	109644	F04477	Hs.204802	ESTs; Moderately similar to GLYCERALDEHYDE 3-PHOSPHATE DEHYDROGENASE; LIVER [H.sapiens]	1.627
	103427	X97303		H.sapiens mRNA for Ptg-12 protein	1.627
	132188	T33888	Hs.221040	KIAA1038 protein	1.626
	131428	U17838	Hs.26719	PR domain containing 2; with ZNF domain	1.626
40	126638	AA649257	Hs.188602	ESTs	1.625
	114503	AA039568	Hs.188083	ESTs	1.625
	121242	AA400857	Hs.97509	EST	1.625
	122414	AA446885	Hs.99087	ESTs; Moderately similar to ZINC FINGER PROTEIN 141 [H.sapiens]	1.625
	110632	H72344	Hs.171635	ESTs	1.624
45	111389	N95837	Hs.169111	ESTs; Weakly similar to L82A [D.melanogaster]	1.624
	112449	R63802	Hs.124186	ring finger protein 2	1.623
	113070	T33484	Hs.6298	ESTs	1.622
	107229	D59284	Hs.34644	ESTs	1.618
50	132710	W83726	Hs.55279	protease inhibitor 5 (maspin)	1.617
	124664	N94814	Hs.33540	ESTs; Weakly similar to KIAA0765 protein [H.sapiens]	1.617
	130166	AA350690	Hs.151411	KIAA0916 protein	1.616
	125040	T78451	Hs.199961	ESTs	1.615
	132972	H39627	Hs.164967	ESTs; Weakly similar to !! ALU SUBFAMILY SB WARNING ENTRY !! [H.sapiens]	1.615
55	115873	AA433916	Hs.90093	heat shock 70kD protein 4	1.611
	120408	AA235045	Hs.190151	ESTs	1.61
	120934	AA383773	Hs.191500	ESTs	1.61
	115259	AA278071	Hs.13453	splicing factor 3b; subunit 1; 155kD	1.609
	134330	D20113	Hs.8185	ESTs; Highly similar to CGI-44 protein [H.sapiens]	1.607
	115117	AA256492	Hs.49007	poly(A) polymerase	1.606
60	125162	W44682	Hs.109896	ESTs	1.605
	103946	AA285246	Hs.111650	ESTs; Weakly similar to Ptt1 homolog [H.sapiens]	1.604
	133389	AA166917	Hs.72639	ESTs	1.603
	115528	AA342301	Hs.53928	ESTs; Weakly similar to !! ALU CLASS B WARNING ENTRY !! [H.sapiens]	1.602
	129704	W81301	Hs.12064	ubiquitin specific protease 22	1.602
65	109313	AA206800	Hs.86276	ESTs; Moderately similar to zinc finger protein dp [H.sapiens]	1.601
	130457	U58091	Hs.155976	cullin 4B	1.6
	123076	AA485211	Hs.190046	ESTs	1.6
	115113	AA256460	Hs.44610	ESTs	1.6
	117731	N46433	Hs.46609	ESTs	1.6

5	123344	AA504338	Hs.171857	ESTs	1.599
	131788	X86098	Hs.3238	adenovirus 5 E1A binding protein	1.597
	125370	AA256743	Hs.151791	KIAA0092 gene product	1.596
	114918	AA236813	Hs.72324	ESTs; Highly similar to unknown [H.sapiens]	1.596
	114807	AA160805	Hs.199832	ESTs	1.596
10	105103	AA151593	Hs.10130	ESTs	1.594
	125004	T60120		yb68f02.s1 Stratagene ovary (#937217) Homo sapiens cDNA clone IMAGE:76347 3', mRNA sequence.	1.592
	105658	AA282914	Hs.10176	ESTs	1.589
	110455	H52172		y85e8.s1 Soares_pineal_gland_N3HPG Homo sapiens cDNA clone IMAGE:23111 3' similar to contains Alu repetitive element, mRNA sequence	1.589
	119780	W72967	Hs.191381	ESTs; Weakly similar to hypothetical protein [H.sapiens]	1.587
15	126983	AA211537		zn55d01.r1 Stratagene muscle 937209 Homo sapiens cDNA clone IMAGE:562081 5', mRNA sequence.	1.586
	134675	AA250745	Hs.87773	protein kinase; cAMP-dependent; catalytic; beta	1.584
	105431	AA252033	Hs.15036	ESTs; Weakly similar to !! ALU SUBFAMILY J WARNING ENTRY !! [H.sapiens]	1.584
	120187	Z40251	Hs.56974	ESTs	1.584
	115830	AA428137	Hs.86434	ESTs	1.581
20	135069	AA456311	Hs.93961	ESTs; Weakly similar to !! ALU CLASS A WARNING ENTRY !! [H.sapiens]	1.581
	122997	AA479295	Hs.106290	kelch motif containing protein	1.581
	119707	W67569	Hs.44143	ESTs; Weakly similar to SNF2alpha protein [H.sapiens]	1.58
	131934	D80948	Hs.34922	ESTs	1.58
	106141	AA424558	Hs.9302	phosphatidylcholine-specific phospholipase C-like	1.58
25	115271	AA279422	Hs.5724	ESTs	1.579
	131468	R27598	Hs.27197	KIAA0797 protein	1.577
	131165	R98173	Hs.23763	Max-interacting protein	1.575
	117273	N21680	Hs.43047	ESTs	1.575
	101569	M33772	Hs.182421	troponin C2; fast	1.575
30	116127	AA459703	Hs.79070	v-myc avian myelocytomatosis viral oncogene homolog	1.575
	120022	W90625	Hs.58432	ESTs	1.575
	117512	N32157	Hs.82207	ESTs	1.574
	106511	AA452865	Hs.206713	UDP-Gal4betaGlcNAc 6-epimerase; polypeptide 2	1.573
	116415	AA609204	Hs.27973	KIAA0874 protein	1.573
35	127879	AA810215	Hs.189079	ESTs	1.571
	125211	W72798	Hs.103177	ESTs; Widely similar to cDNA EST EMBL:D32579 comes from this gene [C.elegans]	1.571
	114746	AA135638	Hs.223756	ESTs	1.571
	122698	AA456112	Hs.99410	ESTs	1.57
	116765	H12636	Hs.121585	ESTs; Weakly similar to reverse transcriptase [H.sapiens]	1.568
40	130895	AA609828	Hs.21015	ESTs; Highly similar to tetracycline transporter-like protein [M.musculus]	1.568
	114338	Z41366	Hs.40109	KIAA0872 protein	1.567
	111005	N53076	Hs.5996	ESTs	1.567
	128135	AA913491	Hs.189143	ESTs; Moderately similar to !! ALU SUBFAMILY J WARNING ENTRY !! [H.sapiens]	1.567
	112046	R43365	Hs.22273	ESTs	1.566
45	132160	AA281770	Hs.184081	seven in absentia (Drosophila) homolog 1	1.566
	111568	R10153	Hs.20561	ESTs	1.566
	127775	H04106	Hs.179902	ESTs; Weakly similar to NG22 [H.sapiens]	1.566
	115359	AA281936	Hs.88914	ESTs	1.566
	121845	AA425734	Hs.165066	ESTs; Weakly similar to hypothetical protein [H.sapiens]	1.565
50	127854	AA769520		ESTs; Weakly similar to REGULATOR OF MITOTIC SPINDLE ASSEMBLY 1 [H.sapiens]	1.564
	120287	AA187679	Hs.111114	ESTs	1.563
	114940	AA243012	Hs.75928	ESTs	1.562
	126716	AA031700	Hs.251962	ESTs	1.562
	134161	U97188	Hs.79440	IGF-II mRNA-binding protein 3	1.561
55	125390	H95094	Hs.75187	translocase of outer mitochondrial membrane 20 (yeast) homolog	1.561
	115334	AA281244	Hs.65300	ESTs	1.559
	113721	T97931	Hs.18180	EST	1.558
	114895	AA236177	Hs.76591	KIAA0887 protein	1.558
	119341	T62571	Hs.146388	microtubule-associated protein 7	1.558
60	108012	AA039616	Hs.61933	ESTs	1.558
	130335	AA156499	Hs.8454	protein kinase; cAMP-dependent; regulatory; type II; alpha	1.557
	134351	R82074	Hs.82109	syndecan 1	1.557
	133300	D51401	Hs.70333	ESTs	1.553
	106920	AA490899	Hs.24462	ESTs	1.553
65	118744	N74075	Hs.94293	EST	1.552
	126489	W20018	Hs.144228	ESTs; Weakly similar to ZINC FINGER PROTEIN 83 [H.sapiens]	1.55
	115913	AA436720	Hs.65487	ESTs	1.55
	107868	AA025234	Hs.61260	ESTs	1.55
	134520	N21407	Hs.257325	ESTs	1.55

	109703	F09684	Hs.24792	ESTs; Weakly similar to ORF YOR283w [S.cerevisiae]	1.55
	120288	AA187938	Hs.55189	ESTs; Weakly similar to F25B5.3 [C.elegans]	1.548
	106356	AA443277	Hs.31034	peroxisomal biogenesis factor 11A	1.548
	129460	AA235627	Hs.11171	APG5 (autophagy 5; S. cerevisiae)-like	1.547
5	133950	D11861	Hs.77823	ESTs	1.546
	128172	AI400862	Hs.142607	ESTs	1.546
	114162	Z38909	Hs.22265	ESTs	1.545
	101803	M88546	Hs.155691	pre-B-cell leukemia transcription factor 1	1.544
	113617	T93630	Hs.17207	ESTs	1.542
10	104896	AA054228	Hs.23165	ESTs	1.541
	114477	AA032013	Hs.144280	EST	1.54
	110731	H98653	Hs.188006	KIAA0878 protein	1.54
	130367	Z38501	Hs.8768	ESTs; Wldy smlr to fl ALU SUBFAMILY SQ WARNING ENTRY II [H.sapiens]	1.538
	130539	L07044	Hs.250857	Homo sapiens calcium/calmodulin-dependent protein kinase II mRNA; partial cds	1.538
15	134921	W60186	Hs.169487	Kretzler (mouse) mal-related leucine zipper homolog	1.537
	130583	W24957	Hs.16281	ESTs; Moderately similar to similar to C.elegans protein encoded in cosmid T20D3 [H.sapiens]	1.537
	133723	AA088851	Hs.75744	S-adenosylmethionine decarboxylase 1	1.537
	106450	AA449469	Hs.11859	ESTs	1.536
20	104120	AA429838	Hs.89519	KIAA1048 protein	1.536
	100533	HQ1879-HT1919		Ras-Like Protein Tc10	1.535
	130664	R09049	Hs.17625	ESTs	1.535
	127122	AA279153	Hs.190049	ESTs	1.535
	134264	T03391	Hs.8087	ESTs	1.535
25	132319	AA418662	Hs.44625	ESTs	1.535
	115465	AA286941	Hs.43691	ESTs	1.533
	125003	T59442	Hs.100445	ESTs	1.532
	102273	U30888	Hs.75981	ubiquitin specific protease 14 (tRNA-guanine transglycosylase)	1.532
	121875	AA426299	Hs.98510	ESTs	1.532
30	114366	Z41747	Hs.469	succinate dehydrogenase complex; subunit A; flavoprotein (Fp)	1.531
	132844	AA054515	Hs.6127	ESTs; Weakly similar to prostate-specific transglutaminase [H.sapiens]	1.53
	111199	N68210	Hs.29822	ESTs	1.53
	113494	T88878	Hs.258738	ESTs	1.529
	129515	AA490882	Hs.112227	ESTs	1.528
35	133124	AA156049	Hs.65490	ESTs	1.528
	104785	AA027163	Hs.7942	ESTs	1.526
	105595	AA279408	Hs.25866	ESTs	1.526
	130198	U67156	Hs.151988	mitogen-activated protein kinase kinase kinase 5	1.526
	114297	Z40758	Hs.173091	DKFZP434K151 protein	1.525
40	112876	T03488	Hs.4842	ESTs	1.525
	127500	AA525014	Hs.162115	ESTs	1.525
	120519	AA258585	Hs.129887	cadherin 19 (NOTE: redefinition of symbol)	1.525
	119859	W80702	Hs.58481	ESTs	1.525
	129944	L00389	Hs.1361	cytochrome P450; subfamily I (aromatic compound-inducible); polypeptide 2	1.524
45	118864	N89670	Hs.42148	ESTs; Weakly similar to Su(P) [D.melanogaster]	1.523
	123964	C13961	Hs.210115	EST	1.523
	111676	R19414	Hs.168459	ESTs	1.522
	128332	AI079523	Hs.134173	ESTs	1.522
	130455	X17059	Hs.155956	N-acetyltransferase 1 (arylamine N-acetyltransferase)	1.521
50	125181	W58461	Hs.12396	ESTs	1.521
	127093	AA768241		oa72d02.s1 NCI_CGAP_GCB1 Homo sapiens cDNA clone IMAGE:1317795 3', mRNA sequence.	1.521
	132156	AA157401	Hs.4113	S-adenosylhomocysteine hydrolase-like 1	1.521
	125303	Z39821	Hs.107295	ESTs	1.52
55	132697	AA281951	Hs.5518	Homo sapiens mRNA; cDNA DKFZp566J2146 (from clone DKFZp566J2146)	1.52
	117086	H83135	Hs.41840	ESTs	1.519
	113355	T79203	Hs.14480	ESTs	1.518
	108621	AA101811	Hs.69506	ESTs	1.518
	109384	AA219172	Hs.86849	EST	1.518
60	128510	X94703	Hs.100816	RAB28; member RAS oncogene family	1.517
	132968	N77151	Hs.61638	myosin X	1.515
	117035	H88798	Hs.41182	ESTs	1.515
	116781	H22985	Hs.52132	ESTs	1.513
	108677	AA115629	Hs.118531	ESTs	1.513
65	130214	H78003	Hs.15266	ESTs	1.513
	134700	AA481414	Hs.8868	golgi SNAP receptor complex member 1	1.512
	116618	D80783	Hs.45224	ESTs	1.508
	126257	N89638		tumor necrosis factor receptor superfamily; member 10b	1.508
	125859	AA806808	Hs.118797	ubiquitin-conjugating enzyme E2D 3 (homologous to yeast UBC4/5)	1.508



	113837	W57698	Hs.8888	ESTs	1.507
	114317	Z41038	Hs.469	succinate dehydrogenase complex; subunit A; flavoprotein (Fp)	1.507
	100311	D50640	Hs.184653	phosphodiesterase 3B; cGMP-inhibited	1.507
	126802	AA947601	Hs.97058	ESTs	1.506
5	128661	R82837	Hs.103329	KIAA0970 protein	1.506
	134194	AA233231	Hs.79828	ESTs	1.506
	108953	AA149652	Hs.42128	ESTs	1.504
	133240	D31161	Hs.68613	ESTs	1.502
	132671	X76302	Hs.54849	putative nucleic acid binding protein RY-1	1.501
10	132609	Z48923	Hs.53250	bone morphogenetic protein receptor; type II (serine/threonine kinase)	1.501
	105574	AA278678	Hs.258567	ESTs	1.5
	113718	T97782	Hs.256268	ESTs	1.5
	127824	AJ208365	Hs.127811	ESTs	1.5
15	130132	U55936	Hs.184376	synaptosomal-associated protein; 23kD	1.5
	127394	AA453224		ESTs; Weakly similar to !! ALU SUBFAMILY J WARNING ENTRY !! [H.sapiens]	1.5
	100485	HG11111-HT1111		Ras-Like Protein Tc21	1.5
	101078	L04510	Hs.792	ADP-ribosylation factor domain protein 1; 64kD	1.5
	128611	AA456845	Hs.102471	KIAA0680 gene product	1.5

**TABLE 12A** shows the accession numbers for those primekeys lacking unigeneID's for Table 12. For each probeset we have listed the gene cluster number from which the oligonucleotides were designed. Gene clusters were compiled using sequences derived from Genbank ESTs and mRNAs. These sequences were clustered based on sequence similarity using Clustering and Alignment Tools (DoubleTwist, Oakland California). The Genbank accession numbers for sequences comprising each cluster are listed in the "Accession" column.

Pkey:	CAT number:	Accession:	Uniqua Eos probeset Identifier number
			Gene cluster number Genbank accession numbers
Pkey	CAT number	Accession	
108536	119811_1	AA084524 AA339253 AW966289	
117040	46956_1	AW970600 AA503323 H89218 AF086031 H89112	
100782	18457_1	AA355435 NM_001516 Z30093 T28405 AW949486 AA461142 AA410532 AI652073 AA521208 AI970141 AI968234 AI026102	
		AA713583 AW135876 AA936814 AA770300 AI242635 AA377033 AW960263 AW607683 AI273603 AA410287 AI040513	
		AA460838 AI803916 AW294095 AW448680 AW788677 AW675048 BE542116 AL120521	
100819	3022_1	L34840 NM_003241 U31905 AI546931 AI791616 AI973065 AI792321 AI546937 AI685880 AI732835 AI682360 AA420653	
		AA564047 AI682323 AI824614 AI659889 AI680052 AI970887 AI623108 AA420692 AI418074 AA631018 AI810595 AW291463	
100824	5_36	AW449930 AI668908 AI970818	
		AI393237 AI521317 AI761348 AF025841 D43968 AW994987 L34588 AF025841 D89789 D89788 D89790 AW989832	
		AI971742 AI310238 X80876 AW139668 AW674280 AI365552 AA877452 AV657554 C75229 AA376077 AI798066 AW609213	
		W25586 H30149 BE075089 BE075190 AW580858 H99598 AA425238 AA133916 AW363478 BE158121 BE158127	
		AW467960 BE158135 BE158126 BE158145 N92860 AA847246 AI961688 AI361423 AA878154 AA043767 AI863712	
		AI559226 AW339007 AI371266 AI366901 AA046624 AA134739 AW449154 AA130232 AI458720 AA862511 AI700627	
		R70437 AW004008 AA045229 AI671572 H99599 AA043768 AI685454 AI871685 N29937 X90977 AA524240 AI142114	
		AI825750 AI567805 AI631365 AI347893 AA134740 F20669 AA046707 AW793216 AW963298 AW959380 AA363265	
		AI784593 AI268201 R69451 AV657618 AI695588	
125004	264197_1	BE312163 AI230788 AA374482 AI926059 AA622653 AI860704 BE139185 AW296884 T60238 T60120	
102313	27608_1	U33921 AI190489 AA573311	
102337	553_1	AI814663 AA806761 AA765241 AA019317 AA092255 AA035405 T85079 AA890151 AI373959 T85080 BE153728 AA740848	
		BE080682 AL048137 AW182316 AI699468 AW274481 AW407538 AA306562 AW950024 AW949943 AL045703 AWB43196	
		W25132 BE612794 AA304266 AW958054 H25673 AV646563 AV646573 BE172990 AW593488 AA385181 AA164998	
		AI246476 AA345406 AI277554 AA134749 AA856824 BE613247 AA299003 AL048138 AA028121 T92510 AI923835	
		AW020440 AI401584 AI889401 N93290 AA044247 AA028100 AI582845 AA811151 AI741811 AI925878 AA448277 AA172221	
		AI214783 BE220793 AA022746 AI082882 AA022849 AI928385 AA573472 AI420686 AW072902 AI789493 AI873506	
		AI468977 AI192079 AI468976 AA044272 AW015701 AW316979 AA933042 AA609017 AI318393 AI424571 AI934945	
		AA172023 AW050917 AA846180 AA134748 AI003947 AI768769 AW008697 AA653517 AW575680 AI474214 AA401478	
		U36922 AA927064 AA668000 D62654 T91745 AW500202 AA194764 AA746346 AA130464 AW117488 AA054526 N26432	
		H02534 H04964 AW303367 BE300931 AI218049 AI208073 AW182749 AA983630 AI147585 AA194765 AA054534 AA922720	
		AI436585 AI346535 AA134269 AA280923 AA897422 AA019559 AW274010 AA035406 AA917879 H89327 W32908 AI216046	
		AW496823 AA019414 H82288 W35284 AI936621 AI767113 AA866177 AW367874 H82398 AF032885 AW300151 AW467069	
		AA809346 AI188507 AI494178 AA872752 AI631631 U02310 NM_002015 AA815006 AI382453 AW197658 AI761654	
		AI804396 AI382221 AI813640 AI439635 AI523901 AW517242 AI221705 AW288104 AW204560 AW573095 AW028783	
		AW014650 AI766744 AI808294 AI698758 AI641809 AI766667 AI479103 AA872797 AA769305 AA765080 AA334168	
		AI472322	
124704	292319_1	R07335 R07640	
116988	185904_1	AW953679 AW953680 AA244436 H82527 AA361046 AA244483 H82526	
124825	330773_1	AA501669 R52088	
110455	46874_1	H52576 AF085971 H52172	
126257	182217_1	N99638 AW973750 AA328271 H90994 AA558020 AA234435 N59599 R94815	
125624	154135_1	AW968363 AA465492 R34539 AA165411	
104038	284235_1	AA374532 AA421255	
103427	43892_1	BE514383 AA071273 AW247987 AW673286 BE312102 AW749824 BE071985 AW577383 BE071945 BE072005 AW577355	
		BE071965 AW239231 BE072000 BE071960 AW577360 AW749830 AW373020 X97303 AW999522 BE000192 BE562219	
		BE266655 BE264970	
		AA074713 AA447008	
104142	113242_1	AW977549 AA256038 AL365415 AW500455 AA768241 AW968097 Z17849 AA256104	
127093	47721_1		

5	125873 10492_1	AW271838 AL133605 C01648 H29959 AA999896 D60676 AW999454 AW961176 AA315244 H14437 AW386118 N46512 AW272021 AI768516 BE468421 AI082809 AI804454 AA905101 AW173368 N38942 AW614169 AI080483 N29489 AI500550 AA994475 AA614464 AA707368 AA593145 AA569473 AW627815 AI828244 N63226 N42300
	125954 4457_1	NM_016353 AB023584 W44753 R09585 AA382865 R23772 AI814257 AA974046 AK001608 AI835638 AW440609 AI420022 AA777388 AA806969 AI554876 AI584006 AI688556 AI688634 AI697987 AI014540 AI806683 AI741202 AW263154 AW297238 AI149951 AI589076 AW082158 AW614265 AA931887 AA781969 R09490 AA484643 AI207121 AI088390 AI538065 AI619547 AI741925 AI702846 H40846 R93943 AW747979 AA461348 U30163 AA326023 AI535892 AW242870 AI244025 AI222558 W38425 AW473830 AI624599 AI821226 AI683152 AI096458 AI123822 AW170802 C16447 AI337674 D25726 AW339368 AW771259 AA461174
10	125992 1589048_1	H48372 W01626
	127210 15307_6	AA305278 AA223833
15		110924 6443_1 AW058463 AF195766 AA680145 T86901 W60373 W60281 NM_007222 AF106862 AI000795 AA167188 AW884503 AW891313 AW891332 AW891312 AI884924 AI123518 N75170 AA131614 H25330 AI913358 AI742277 W25576 R58771 AW445159 AW888628 AW888627 AW274674 AI088482 N52314 N34282 AW001769 AI338943 T66784 AI288983 AW468676 AW237528 H25289 N71690 AA610128 AI143458 AI082599 N49144 AA854773 AW663411 AW610151 N47938 AW601626 AA167189 AA918304 AA05205 BE069496 AA652836 BE069499 AI698298 AW249623 AW888578 BE567635 T10726 AW604715 D54245 D53062 D55610 D55555 AA301378 AI133498 N77788 AI936320 AW090734 AI269877 N50828 AA550814 AI421993 AI005384 N50813 D60292 D59349 AA131710 D81698 D81699
	127263 232161_1	AA331156 AA331157 AA331155
20	135197 29440_1	U76456 NM_003256 AF057532 AA193414 AW293304 AW983378 AA313095 AI359841 AI969312 AI080163 AW448926 AI671136 BE468399 AI637967 AI671873 AW196583 AW071635 AI634427 AW296872 AW292470 AA193650
	127394 304844_1	BE161832 AA453224 AA485772
25	126879 1860_2	D90391 M55575 AI652268 AA719776
	126983 171841_1	AA524886 AW971347 AA211537
30	120470 188975_1	AW971327 AA524988 AW628653 AA251797
	127854 443863_1	AW976798 AA769520
35	121367 280429_1	AA432071 AA405648 AW000908 T16347
	106320 6435_1	AB028957 AL120001 AI267678 H10928 R19844 AW970334 AA393182 F05472 F11711 H09908 N50250 AI815411 BE463679 D61488 AW970253 D60889 C15548 D61011 D60867 AI815795 AA534831 D81386 AW235038 AI382158 D81174 AA416899 AA852310 H09789 H10929 H09813 F09369 R44721 D51515 Z38456 R14004 T66255 F12148 F12139 AW351702 M85350 AI018713 AW972450 AW972645 AA514964 T66172 F09785 F09776 AA436608 T05327 T07118 AA339352 AW301608 N46706 AA649093 AA287595 AW811753 AA287596 N39260 NM_001874 J04970 T91426 AW205201 T84979 AA255727 AA847837 R02164 T91339 AV651884 AV651835 AV651350 AV650118 AV651338 AI272002 AI367796 AA830651 AA262112 AW151198 AI076696 AA219720 AL135197 AA305877 N56376 AA318063 AA130725 AW954903 BE541230 AW383312 U86753 D85423 AI679458 AI122932 AB007892 AI583919 BE160134 F08104 R34903 F13440 AA095444 AA262453 AA191036 R17895 T81268 BE149776 AI279537 AI143113 AA361072 AW959030 AW268817 AA811533 BE275179 AI221677 T65147 R49293 AA249176 BE000290 AA768053 F09494 BE092845 BE172099 Z41177 AA044750 AI909768 BE140795 BE140574 AW845210 AW752452 BE243244 AA843664 AI300080 BE169032 AW189979 BE004869 AA621872 AI851772 AI878897 AI926598 N62813 AI350912 AW608791 AI309602 AI983138 AW875592 AI655073 AW875626 AA130608 AI370827 C75528 C75554 AW263335 AI344426 BE004788 AA576220 AA604824 AI431405 AA749378 R38882 AW855075 AA173821 C76657 AA219572 AW768408 R43141 AI431414 AA483343 AI673792 T17294 AW770187 N74285 AI476404 AI088288 AA654152 AW974864 BE617311 BE243328 BE168049
40		U64675 AW167507 AW167508 BE218568 AA778360 W85722 AL044843 BE159404 AF012086 AW898811 AW898610 BE159405 BE092191 AW898026 AW369841 AW368064 AW606702 AL044731 R82691 AA419346 AA416558 H96045 AL040450 AI640531 AI808434 AL046613 AW855784 AW362469 AL048881 AL049015 AA094272 AA888908 AA417294 AW237786 R59793 AL044916 D82402 AI216854 AI078342 H96406 AL037845 AI915900 AA972133 AI478783 T31074 Z21135 Z21396 AA352182 R13918 AA430178 C17811 AI371824 AI742256 AA926801 N79156 AA350610 AA081971 N83639 R35544 AA312292 AW952080 N42322 AA171857 AA565297 R89207 AA504106 AI630782 AA826482 AI301579 T36241 AW866618 Z28426 AL043480 AI124636 AA393449 T19504 AW887823 AI289814 N53979 AL043571 AI632764 AI859613 AI986308 AI683212 AI984499 AI133258 C05898 AW512761 AI041260 BE466240 Z19161 AI351190 N67549 AI373374 AA400873 AW440914 AW514879 AA770146 AI358754 R51113 AI283773 AA649888 T30543 D54358 R37750 T03358 T15451 T15880 AA999689 N67306 AI056289 T85597 N62441 R89099 R00035 T85596 R61335 R00128 N63359 AI535964 AI207768 M31468 NM_012250 W01322 AA253280 AA293148 AW582106 R79880 AA459547 AA363459 AA234396 N31669 H44468 AA434587 AW363088 AW993541
	130542 28089_3	AA070906 AA070934
45		X51501 NM_002652 Y10179 J03460 AI791618 AI821473 AA916588 AA564296 AA918110 AI972286 AI420470 AI568790 AI597724 AW205207 AI659305 AI791620 AA532383 AI821475 AA526498
	108345 112277_6	NM_012249 M31470 AL043108 AA282561 AA178883 T29433 AA313329 W48807 AW404323 AA453560 AW403227 H94816
50	100522 19669_1	W17101 AA165152 W23989 AA091310
	100533 32905_1	AL121734 D54896 AA424269 BE242806 AA362118 BE018454 AI280348 AL048769 M35543 AA757734 AI128885 H20289 H23728 AI203445 H41481 H18237 H44081 H92839 AI928621 H75675 D51148 AI796198 AW390453 D55579 D54145 D53998 D54015 R37664 H17541 AA668681 T65081 R15867 AW468123 R16049 H69030 AA054226 H16070 F9655 R92144 T03521 R05473 H92840 AA018186 R91707
55	100485 30576_2	U35637 AA112989 Z19308
	108345 112277_6	
60	100522 19669_1	
	100533 32905_1	
65	100598 23902_2	
	102332 14745_3	
65	118250 genbank_N62602	N62602
	103878 entrez_Z84483	Z84483
65	119400 genbank_T92767	T92767
	119559 entrez_W38197	W38197

## **MISSING AT THE TIME OF PUBLICATION**

**TABLE 13:** shows genes, including expression sequence tags, up-regulated in prostate tumor tissue compared to normal prostate tissue as analyzed using Affymetrix/Eos Hu02 GeneChip array. Shown are the ratios of "average" normal prostate to "average" prostate cancer tissues.

5

10	Pkey:	Unique Eos probeset identifier number		
	ExAccn:	Exemplar Accession number, Genbank accession number		
	UnigeneID:	Unigene number		
	Unigene Title:	Unigene gene title		
	R1:	Background subtracted normal prostate : prostate tumor tissue		
	Pkey	ExAccn	UnigeneID Unigene Title	R1
15	333516		CH22_FGENES.173_1	0.028
	337954		CH22_EM:AC005500.GENSCAN.96-3	0.029
	332496	R73299	Hs.204354 ras homolog gene family, member B	0.03
20	337944		CH22_EM:AC005500.GENSCAN.89-7	0.033
	334111		CH22_FGENES.330_10	0.033
	333657		CH22_FGENES.241_2	0.034
25	327718		CH.04_hs gj6525284	0.034
	336355		CH22_FGENES.817_5	0.035
	322011	AL137354	EST cluster (not in UniGene)	0.035
30	336377		CH22_FGENES.821_5	0.036
	300254	AW079607	Hs.188417 ESTs; Weakly similar to ZnT-3 [H.sapiens]	0.037
	330096		CH.19_p2 gj6015278	0.037
35	335191		CH22_FGENES.507_6	0.038
	334040		CH22_FGENES.322_8	0.039
	333586		CH22_FGENES.204_2	0.04
40	333295		CH22_FGENES.132_2	0.042
	313326	AI088120	Hs.122329 ESTs	0.043
	329517		CH.10_p2 gj3983513	0.043
45	333403		CH22_FGENES.144_21	0.043
	335226		CH22_FGENES.513_11	0.044
	335976		CH22_FGENES.652_11	0.045
50	333637		CH22_FGENES.229_2	0.046
	334582		CH22_FGENES.407_5	0.046
	336437		CH22_FGENES.826_4	0.047
55	337461		CH22_FGENES.782-1	0.047
	302892	N58545	Hs.6975 histone deacetylase 3	0.049
	338689		CH22_EM:AC005500.GENSCAN.475-3	0.049
60	334721		CH22_FGENES.421_32	0.049
	305867	AA864572	EST singleton (not in UniGene) with exon hit	0.049
	335498		CH22_FGENES.571_7	0.05
65	311596	AI682088	Hs.223368 ESTs	0.05
	326959		CH.21_hs gj6469838	0.051
	311688	AW025661	Hs.240090 ESTs	0.052
70	317298	AI922374	Hs.158549 ESTs	0.052
	332984		CH22_FGENES.54_6	0.052
	321039	AW247083	EST cluster (not in UniGene)	0.053
75	335844		CH22_FGENES.623_4	0.053
	325371		CH.12_hs gj5866920	0.054
	335667		CH22_FGENES.590_18	0.054
80	333635		CH22_FGENES.228_2	0.054
	336736		CH22_FGENES.110-2	0.055
	335893		CH22_FGENES.635_1	0.055
85	333170		CH22_FGENES.94_5	0.055
	329768		CH.14_p2 gj6015501	0.055
	334030		CH22_FGENES.320_2	0.055
90	323359	AA234172	Hs.137418 ESTs	0.055
	300453	AW051431	Hs.113029 ribosomal protein S25	0.055
	334262		CH22_FGENES.367_12	0.055
95	306590	AI000246	EST singleton (not in UniGene) with exon hit	0.055
	331087	R22520	Hs.23398 ESTs	0.055
	338620		CH22_EM:AC005500.GENSCAN.450-18	0.056
100	339045		CH22_DA59H18.GENSCAN.28-5	0.056
	308023	AI452732	EST singleton (not in UniGene) with exon hit	0.057

	339067		CH22_DA59H18.GENSCAN.33-3	0.057
	335689		CH22_FGENES.590_4	0.057
	339069		CH22_DA59H18.GENSCAN.33-5	0.057
5	338178		CH22_EM:AC005500.GENSCAN.219-4	0.057
	328159		CH.06_hs gij5868065	0.058
	335655		CH22_FGENES.590_6	0.058
	336371		CH22_FGENES.820_1	0.058
	336558		CH22_FGENES.842_3	0.059
10	337738		CH22_EM:AC000097.GENSCAN.100-4	0.059
	334273		CH22_FGENES.369_2	0.059
	335889		CH22_FGENES.633_3	0.059
	327807		CH.05_hs gij5867988	0.059
	333315		CH22_FGENES.138_7	0.059
	338825		CH22_DJ246D7.GENSCAN.4-6	0.06
15	337612		CH22_C20H12.GENSCAN.22-5	0.06
	333897		CH22_FGENES.293_4	0.06
	335990		CH22_FGENES.655_4	0.06
	334264		CH22_FGENES.367_15	0.06
	338653		CH22_EM:AC005500.GENSCAN.460-39	0.061
20	322303	W07459	EST cluster (not in UniGene)	0.061
	333498		CH22_FGENES.168_8	0.061
	336522		CH22_FGENES.839_3	0.061
	301357	AW285677	Hs.137840 ESTs; Moderately similar to HOMEBOX PROTEIN SIX1 [H.sapiens]	0.062
25	305917	AA876469	Hs.181357 laminin receptor 1 (67kD; ribosomal protein SA)	0.062
	338143		CH22_FGENES.705_5	0.063
	333493		CH22_FGENES.168_2	0.063
	332533	M99487	Hs.1915 folate hydrolase (prostate-specific membrane antigen) 1	0.063
	325844		CH.16_hs gij6552453	0.063
30	336402		CH22_FGENES.823_17	0.063
	335767		CH22_FGENES.607_1	0.064
	301893	T80334	EST cluster (not in UniGene) with exon hit	0.064
	324019	AW177009	EST cluster (not in UniGene)	0.064
	305801	AA845997	EST singleton (not in UniGene) with exon hit	0.064
35	335188		CH22_FGENES.507_3	0.065
	337533		CH22_FGENES.828-2	0.065
	333311		CH22_FGENES.138_3	0.065
	335668		CH22_FGENES.590_19	0.065
40	306786	AI041589	EST singleton (not in UniGene) with exon hit	0.066
	306385	AA982086	EST singleton (not in UniGene) with exon hit	0.066
	306249	AA933840	EST singleton (not in UniGene) with exon hit	0.066
	335018		CH22_FGENES.474_6	0.066
	333594		CH22_FGENES.210_3	0.066
45	333900		CH22_FGENES.293_7	0.066
	325207		CH.10_hs gij6552430	0.067
	329888		CH.15_p2 gij6067149	0.067
	326238		CH.17_hs gij5867260	0.067
	333658		CH22_FGENES.241_4	0.067
	335809		CH22_FGENES.617_6	0.068
50	307427	AI243437	EST singleton (not in UniGene) with exon hit	0.068
	318428	AI949409	Hs.224583 ESTs	0.069
	327005		CH.21_hs gij5867664	0.069
	330483	HG998-HT998	Sulfotransferase, Phenol-Prefering	0.069
55	333318		CH22_FGENES.138_10	0.07
	333313		CH22_FGENES.138_5	0.07
	325937		CH.16_hs gij5867132	0.07
	335663		CH22_FGENES.590_14	0.07
	335349		CH22_FGENES.539_2	0.07
60	303396	AA224470	Hs.25426 ESTs; Weakly similar to unknown [H.sapiens]	0.07
	332603	N66681	Hs.33470 ESTs	0.07
	333310		CH22_FGENES.138_2	0.071
	309924	AW340812	EST singleton (not in UniGene) with exon hit	0.071
	336340		CH22_FGENES.814_15	0.071
65	308025	AI453365	Hs.172928 collagen; type I; alpha 1	0.071
	306805	AI055966	EST singleton (not in UniGene) with exon hit	0.071
	335499		CH22_FGENES.571_8	0.071
	329669		CH.14_p2 gij6272129	0.071
	321666	D28390	EST cluster (not in UniGene)	0.071
	338174		CH22_EM:AC005500.GENSCAN.219-2	0.072

	336556		CH22_FGENES.842_1	0.072
	305451	AA738105	Hs.140 immunoglobulin gamma 3 (Gm marker)	0.072
	336684		CH22_FGENES.46-1	0.072
5	326943		CH.21_hs g 6004446	0.073
	333947		CH22_FGENES.303_1	0.074
	333214		CH22_FGENES.104_5	0.074
	331917	AA446572	Hs.174007 ESTs; Moderately similar to !!!! ALU SUBFAMILY J WARNING	0.074
	339102		CH22_DA59H18.GENSCAN.44-9	0.074
10	328122		CH.06_hs g 5868031	0.075
	332250	N62712	Hs.226223 KIAA0618 gene product	0.075
	328506		CH.07_hs g 5868471	0.075
	331756	AA291468	Hs.98504 ESTs	0.075
	335193		CH22_FGENES.507_8	0.076
15	317729	AA971718	Hs.128141 ESTs	0.076
	304515	AA458708	Hs.251577 hemoglobin; alpha 2	0.076
	313644	AI565766	Hs.124960 ESTs	0.076
	326145		CH.17_hs g 5867204	0.076
	336394		CH22_FGENES.823_6	0.077
20	306516	AA989542	EST singleton (not in UniGene) with exon hit	0.077
	300629	AA152119	Hs.155101 ATP synthase; H+ transporting; mitochondrial F1 complex; alpha subunit; Isoform 1; cardiac muscle	0.077
	333160		CH22_FGENES.91_2	0.077
	337490		CH22_FGENES.799-5	0.077
25	305403	AA723748	EST singleton (not in UniGene) with exon hit	0.077
	331747	AA281765	Hs.193689 ESTs	0.077
	332792		CH22_FGENES.3_2	0.078
	330513	M81057	Hs.180884 carboxypeptidase B1 (tissue)	0.078
30	308905	AI859636	Hs.8102 ribosomal protein S20	0.078
	337419		CH22_FGENES.759-4	0.078
	333459		CH22_FGENES.157_8	0.078
	334851		CH22_FGENES.440_3	0.078
	329046		CH.X_hs g 5868569	0.078
	327879		CH.06_hs g 5868142	0.079
35	305830	AA857665	EST singleton (not in UniGene) with exon hit	0.079
	302928	AL137719	EST cluster (not in UniGene) with exon hit	0.079
	304321	AA136698	Hs.113029 ribosomal protein S25	0.079
	326390		CH.19_hs g 5867340	0.079
40	335230		CH22_FGENES.514_2	0.08
	334522		CH22_FGENES.412_6	0.08
	335331		CH22_FGENES.535_4	0.08
	304753	AA578840	Hs.77961 major histocompatibility complex; class I; B	0.08
	301863	AI418863	EST cluster (not in UniGene) with exon hit	0.081
	336561		CH22_FGENES.842_6	0.081
45	335611		CH22_FGENES.583_5	0.081
	305080	AA635771	EST singleton (not in UniGene) with exon hit	0.081
	306051	AA905130	EST singleton (not in UniGene) with exon hit	0.082
	308289	AI571211	EST singleton (not in UniGene) with exon hit	0.082
	334365		CH22_FGENES.378_13	0.082
50	335496		CH22_FGENES.571_4	0.082
	332634	S38953	Human unidentified gene complementary to P450c21 gene; partial cds	0.082
	337824		CH22_EM:AC005500.GENSCAN.13-18	0.082
	335822		CH22_FGENES.619_7	0.082
55	334758		CH22_FGENES.428_7	0.082
	309641	AW194230	Hs.253100 EST	0.082
	333064		CH22_FGENES.75_7	0.083
	338695		CH22_EM:AC005500.GENSCAN.477-25	0.083
	331809	AA402482	Hs.97312 ESTs	0.083
60	326138		CH.17_hs g 5867203	0.083
	328304		CH.07_hs g 6004478	0.083
	330570	U60276	Hs.165439 arsA (bacterial) arsenite transporter; ATP-binding; homolog 1	0.083
	334305		CH22_FGENES.373_8	0.083
	335885		CH22_FGENES.632_3	0.083
	325839		CH.16_hs g 6552452	0.083
65	333531		CH22_FGENES.175_18	0.084
	330385	AA449749	Hs.31386 ESTs; Highly similar to secreted apoptosis related protein 1 [H.sapiens]	0.084
	323305	AA811351	Hs.25307 Homo sapiens clone 24812 mRNA sequence	0.084
	331698	Z39929	Hs.65843 ESTs	0.084

	335888		CH22_FGENES.633_2	0.084
	306008	AA894390	EST singleton (not in UniGene) with exon hit	0.084
	334249		CH22_FGENES.385_15	0.084
5	318303	AW451197	Hs.113418 ESTs	0.084
	330171		CH.02_p2 gjl6648220	0.084
	338662		CH22_FGENES.41-1	0.085
	320506	AI815668	Hs.157476 suc1-associated neurotrophic factor target 2 (FGFR signalling adaptor)	0.085
	316974	AI740721	Hs.128292 ESTs	0.085
10	336492		CH22_FGENES.832_9	0.085
	335750		CH22_FGENES.602_4	0.085
	335676		CH22_FGENES.694_1	0.086
	336093		CH22_FGENES.691_2	0.086
15	310932	AI933861	Hs.222852 ESTs	0.086
	335160		CH22_FGENES.502_4	0.086
	334306		CH22_FGENES.373_9	0.086
	334793		CH22_FGENES.433_5	0.086
	333936		CH22_FGENES.301_2	0.087
	336413		CH22_FGENES.823_35	0.087
20	333775		CH22_FGENES.272_6	0.087
	335971		CH22_FGENES.652_4	0.087
	301737	AI815981	EST cluster (not in UniGene) with exon hit	0.087
	339101		CH22_DA59H18.GENSCAN.44-6	0.087
25	327612		CH.04_hs gjl6525283	0.087
	326241		CH.17_hs gjl5857260	0.088
	338386		CH22_EM:AC005500.GENSCAN.331-4	0.088
	327762		CH.05_hs gjl5867961	0.088
	305266	AA679772	EST singleton (not in UniGene) with exon hit	0.088
	334359		CH22_FGENES.378_4	0.088
30	335500		CH22_FGENES.571_10	0.088
	329687		CH.14_p2 gjl6117856	0.088
	333654		CH22_FGENES.240_2	0.088
	324430	AA464018	EST cluster (not in UniGene)	0.088
	325999		CH.16_hs gjl5867073	0.089
35	334832		CH22_FGENES.439_1	0.089
	339115		CH22_DA59H18.GENSCAN.49-3	0.089
	300896	AI916902	Hs.213882 ESTs	0.089
	328784		CH.07_hs gjl5868309	0.089
40	335044		CH22_FGENES.480_1	0.089
	329791		CH.14_p2 gjl6469354	0.089
	333656		CH22_FGENES.240_4	0.089
	326180		CH.17_hs gjl5867211	0.089
	333391		CH22_FGENES.144_6	0.089
	338324		CH22_EM:AC005500.GENSCAN.306-3	0.089
45	305396	AA721052	EST singleton (not in UniGene) with exon hit	0.089
	337483		CH22_FGENES.795-7	0.09
	326424		CH.19_hs gjl5867369	0.09
	306454	AA977992	EST singleton (not in UniGene) with exon hit	0.09
	338893		CH22_DJ32110.GENSCAN.7-6	0.09
50	327470		CH.02_hs gjl5867772	0.09
	333165		CH22_FGENES.91_7	0.09
	307155	AI186738	Hs.182426 ribosomal protein S2	0.09
	330717	AA233926	Hs.23635 ESTs	0.09
55	335334		CH22_FGENES.535_10	0.09
	335907		CH22_FGENES.636_2	0.09
	333885		CH22_FGENES.292_7	0.09
	331034	N51868	Hs.31965 ESTs; Moderately similar to 40S RIBOSOMAL PROTEIN S20 [H.sapiens]	0.09
	304660	AA534416	Hs.162185 ESTs	0.09
60	328217		CH.06_hs gjl5868096	0.091
	336068		CH22_FGENES.684_13	0.091
	302833	AA295381	Hs.44423 ESTs	0.091
	328668		CH.07_hs gjl5868254	0.091
	335309		CH22_FGENES.532_2	0.091
65	338481		CH22_EM:AC005500.GENSCAN.377-5	0.091
	306286	AA936892	EST singleton (not in UniGene) with exon hit	0.091
	305070	AA639783	EST singleton (not in UniGene) with exon hit	0.091
	304870	AA594811	Hs.119122 ribosomal protein L13a	0.091
	303856	AA968589	Hs.944 glucose phosphate isomerase	0.091



5	323789	AI459812	Hs.170460	ESTs; Weakly similar to KIAA0990 protein [H.sapiens]	0.092
	334910			CH22_FGENES.455_3	0.092
	326382			CH.19_hs gi5867327	0.092
	332467	AA489630	Hs.119004	KIAA0665 gene product	0.092
	338534			CH22_EM:AC005500.GENSCAN.402-7	0.092
10	336449			CH22_FGENES.829_6	0.092
	333709			CH22_FGENES.250_24	0.092
	336559			CH22_FGENES.842_4	0.092
	333230			CH22_FGENES.107_10	0.093
	333133			CH22_FGENES.83_9	0.093
15	334885			CH22_FGENES.451_11	0.093
	330605	X02419	Hs.77274	plasminogen activator; urokinase	0.093
	336392			CH22_FGENES.823_4	0.093
	334083			CH22_FGENES.327_38	0.093
	325469			CH.12_hs gi58617034	0.093
20	331077	R09531	Hs.19039	ESTs	0.093
	303701	AW500732		EST cluster (not in UniGene) with exon hit	0.093
	334218			CH22_FGENES.358_3	0.093
	336542			CH22_FGENES.840_6	0.093
	337151			CH22_FGENES.546-1	0.093
25	333642			CH22_FGENES.231_2	0.093
	336863			CH22_FGENES.297-4	0.093
	334680			CH22_FGENES.419_2	0.093
	326365			CH.18_hs gi5867297	0.093
	338952			CH22_DJ3210.GENSCAN.23-22	0.093
30	337539			CH22_FGENES.832-4	0.094
	333546			CH22_FGENES.180_2	0.094
	335258			CH22_FGENES.518_3	0.094
	336786			CH22_FGENES.168-19	0.094
	321644	AI204177	Hs.237396	ESTs	0.094
35	335943			CH22_FGENES.646_17	0.094
	327918			CH.06_hs gi5868165	0.094
	306398	AA970548		EST singleton (not in UniGene) with exon hit	0.094
	335671			CH22_FGENES.592_3	0.094
	335033			CH22_FGENES.475_11	0.094
40	338277			CH22_EM:AC005500.GENSCAN.290-2	0.094
	332061	AA504812	Hs.192824	early B-cell factor	0.094
	305153	AA654582	Hs.77039	ribosomal protein S3A	0.094
	333880			CH22_FGENES.292_2	0.094
	323940	AI864428	Hs.170880	ESTs	0.094
45	313779	AA648796	Hs.129771	ESTs	0.095
	323109	AA169345		EST cluster (not in UniGene)	0.095
	332930			CH22_FGENES.38_4	0.095
	335368			CH22_FGENES.543_6	0.095
	303887	R72672	Hs.193484	ESTs; Weakly similar to Similarity with yeast gene L3502.1 [C.elegans]	0.095
50	336223			CH22_FGENES.727_3	0.095
	311280	AI767957	Hs.197737	ESTs; Weakly similar to Y38A8.1 gene product [C.elegans]	0.095
	337256			CH22_FGENES.648-3	0.095
	308814	AI818263		EST singleton (not in UniGene) with exon hit	0.095
	334659			CH22_FGENES.418_7	0.095
55	335895			CH22_FGENES.635_3	0.095
	321697	AW388061	Hs.4953	golgi autoantigen; golgin subfamily a; 3	0.095
	336010			CH22_FGENES.668_8	0.096
	302824	U21260		EST cluster (not in UniGene) with exon hit	0.096
	333612			CH22_FGENES.217_7	0.096
60	304823	AA584837		EST singleton (not in UniGene) with exon hit	0.096
	335665			CH22_FGENES.590_16	0.096
	306518	AA989598		EST singleton (not in UniGene) with exon hit	0.096
	335243			CH22_FGENES.516_4	0.096
	335436			CH22_FGENES.559_5	0.096
65	300243	AI420256	Hs.161271	ESTs	0.096
	332810			CH22_FGENES.7_12	0.097
	308612	AI735834		EST singleton (not in UniGene) with exon hit	0.097
	335818			CH22_FGENES.618_6	0.097
	325838			CH.16_hs gi5552452	0.097
	337482			CH22_FGENES.795-6	0.097
	336645			CH22_FGENES.26-1	0.097
	337293			CH22_FGENES.675-1	0.098

	329893		CH.15_p2 gij6525313	0.098
	326533		CH.19_hs gij5867441	0.098
	334905		CH22_FGENES.452_20	0.098
5	306347	AA961144	EST singleton (not in UniGene) with exon hit	0.098
	336676		CH22_FGENES.43-4	0.098
	339166		CH22_DA59H18.GENSCAN.69-7	0.098
	335774		CH22_FGENES.607_10	0.098
	339216		CH22_FF113D11.GENSCAN.6-11	0.098
	335311		CH22_FGENES.532_4	0.098
10	329632		CH.11_p2 gij6729060	0.098
	328595		CH.07_hs gij5868224	0.098
	326928		CH.21_hs gij6456782	0.098
	315234	AI079680	Hs.120770 ESTs	0.098
	306082	AA908508	EST singleton (not in UniGene) with exon hit	0.098
15	305710	AA826544	EST singleton (not in UniGene) with exon hit	0.098
	318540	T30280	EST cluster (not in UniGene)	0.099
	337553		CH22_C4G1.GENSCAN.2-1	0.099
	320951	AA344069	Hs.202699 neurexophilin 4	0.099
	303845	T08033	EST cluster (not in UniGene) with exon hit	0.099
20	338981		CH22_DA59H18.GENSCAN.2-5	0.099
	321313	R87365	Hs.26058 ESTs; Weakly similar to p532 [H.sapiens]	0.099
	328348		CH.07_hs gij5868383	0.099
	332203	H49388	Hs.102082 EST	0.099
	301780	R07064	EST cluster (not in UniGene) with exon hit	0.099
25	332095	AA608838	Hs.162681 EST	0.099
	333227		CH22_FGENES.107_5	0.099
	316442	AA760894	Hs.153023 ESTs	0.099
	326001		CH.16_hs gij5867073	0.099
	334363		CH22_FGENES.378_11	0.099
30	338895		CH22_DJ32110.GENSCAN.9-2	0.099
	327460		CH.02_hs gij6004455	0.099
	332705	T59161	Hs.76293 thymosin; beta 10	0.1
	307806	AI351739	EST singleton (not in UniGene) with exon hit	0.1
35	322800	F25037	Hs.225175 ESTs	0.1
	304918	AA602697	EST singleton (not in UniGene) with exon hit	0.1
	334327		CH22_FGENES.375_4	0.1
	318359	AI097439	Hs.135548 ESTs	0.1
	326644		CH.20_hs gij5867559	0.1
40	334454		CH22_FGENES.388_3	0.1
	327959		CH.06_hs gij5868210	0.1
	323783	AA330586	Hs.131819 ESTs	0.1
	309198	AI955915	Hs.248038 major histocompatibility complex; class I; C	0.1
	339265		CH22_BA354112.GENSCAN.10-3	0.1
45	320576	AL049977	Hs.162209 Homo sapiens mRNA; cDNA DKFZp564C122 (from clone DKFZp564C122)	0.1
	338132		CH22_EM:AC005500.GENSCAN.200-2	0.1
	333163		CH22_FGENES.91_6	0.101
	337584		CH22_C20H12.GENSCAN.5-1	0.101
50	307588	AI285535	EST singleton (not in UniGene) with exon hit	0.101
	336969		CH22_FGENES.378-2	0.101
	327535		CH.02_hs gij6525279	0.101
	328732		CH.07_hs gij5868289	0.101
	336686		CH22_FGENES.48-3	0.101
55	335777		CH22_FGENES.607_13	0.101
	332944		CH22_FGENES.47_3	0.101
	333174		CH22_FGENES.95_1	0.101
	336380		CH22_FGENES.821_8	0.101
	330571	U60800	Hs.79089 sema domain; immunoglobulin domain (Ig); cytoplasmic domain; (semaphorin) 4D	0.101
60	331789	AA398721	Hs.186749 ESTs	0.101
	338915		CH22_DJ32110.GENSCAN.12-1	0.101
	334844		CH22_FGENES.439_24	0.101
	336642		CH22_FGENES.23-4	0.101
65	334906		CH22_FGENES.452_21	0.101
	333168		CH22_FGENES.98_8	0.101
	300088	AW299993	EST cluster (not in UniGene) with exon hit	0.101
	329373		CH.X_hs gij6682537	0.102
	331120	R46576	Hs.23239 ESTs	0.102
	335656		CH22_FGENES.628_1	0.102

5	331888	AA431337	Hs.98017	ESTs	0.102
	333154			CH22_FGENES.89_4	0.102
	335889			CH22_FGENES.655_2	0.102
	304385	AA235602		EST singleton (not in UniGene) with exon hit	0.102
	338016			CH22_EM:AC005500.GENSCAN.133-1	0.102
10	335190			CH22_FGENES.507_5	0.102
	318595	T39486	Hs.6137	ESTs	0.102
	333697			CH22_FGENES.250_11	0.102
	306526	AA989713		EST singleton (not in UniGene) with exon hit	0.103
	328734			CH.07_hs g 5668289	0.103
15	307294	AI205612	Hs.73742	ribosomal protein; large; P0	0.103
	327424			CH.02_hs g 5867751	0.103
	335872			CH22_FGENES.630_3	0.103
	333572			CH22_FGENES.189_1	0.103
	334774			CH22_FGENES.430_6	0.103
20	338660			CH22_EM:AC005500.GENSCAN.462-1	0.103
	326713			CH.20_hs g 5867595	0.103
	333694			CH22_FGENES.310_18	0.103
	335800			CH22_FGENES.613_4	0.103
	318113	AI187943	Hs.132322	ESTs	0.103
25	337278			CH22_FGENES.665-1	0.103
	336386			CH22_FGENES.822_6	0.103
	334790			CH22_FGENES.432_15	0.103
	303778	AW505368		EST cluster (not in UniGene) with exon hit	0.104
	336524			CH22_FGENES.839_5	0.104
30	328936			CH.08_hs g 5868500	0.104
	335102			CH22_FGENES.494_7	0.104
	300935	AA513644	Hs.222815	ESTs; Weakly similar to Wiskott-Aldrich Syndrome protein [H.sapiens]	0.104
	307581	AI284415		EST singleton (not in UniGene) with exon hit	0.104
	317301	AW291683	Hs.226056	ESTs	0.104
35	335330			CH22_FGENES.535_3	0.104
	337868			CH22_EM:AC005500.GENSCAN.103-2	0.104
	335627			CH22_FGENES.584_7	0.104
	336274			CH22_FGENES.762_2	0.104
	334730			CH22_FGENES.424_5	0.105
40	334408			CH22_FGENES.383_6	0.105
	327237			CH.01_hs g 5867544	0.105
	333321			CH22_FGENES.138_13	0.105
	303181	AA452366		EST cluster (not in UniGene) with exon hit	0.105
	333738			CH22_FGENES.261_2	0.105
45	338255			CH22_EM:AC005500.GENSCAN.276-3	0.105
	334282			CH22_FGENES.369_12	0.105
	330190			CH.05_p2 g 6165182	0.105
	310748	AW014249	Hs.158698	ESTs	0.105
	338150			CH22_EM:AC005500.GENSCAN.207-2	0.105
50	336719			CH22_FGENES.82_6	0.105
	330226			CH.05_p2 g 6013527	0.105
	327801			CH.05_hs g 5867824	0.105
	330525	S75168	Hs.274	megakaryocyte-associated tyrosine kinase	0.105
	334972			CH22_FGENES.468_2	0.105
55	335111			CH22_FGENES.494_19	0.106
	334483			CH22_FGENES.395_5	0.106
	328829			CH.07_hs g 5868337	0.106
	302753	M74299		EST cluster (not in UniGene) with exon hit	0.106
	334512			CH22_FGENES.398_10	0.106
60	330024			CH.16_p2 g 6671908	0.106
	321030	AI769930	Hs.233617	Homo sapiens (clone B3B3E13) Huntington's disease candidate region	0.107
	338410			CH22_EM:AC005500.GENSCAN.341-6	0.107
	334353			CH22_FGENES.376_5	0.107
	338276			CH22_EM:AC005500.GENSCAN.288-9	0.107
65	329053			CH.X_hs g 5868574	0.107
	336560			CH22_FGENES.842_5	0.107
	332158	AA621363	Hs.112980	EST	0.107
	336447			CH22_FGENES.829_4	0.107
	333703			CH22_FGENES.250_17	0.107
	326207			CH.17_hs g 5867222	0.107
	333232			CH22_FGENES.108_1	0.107

	334802		CH22_FGENES.435_1	0.107
	303784	AA704983	EST cluster (not in UniGene) with exon hit	0.107
	338847		CH22_DJ246D7.GENSCAN.10-2	0.107
5	339407		CH22_DJ578N16.GENSCAN.1-9	0.108
	337635		CH22_C20H12.GENSCAN.32-8	0.108
	334650		CH22_FGENES.417_17	0.108
	308511	AI687580	EST singleton (not in UniGene) with exon hit	0.108
	333392		CH22_FGENES.144_8	0.108
	325840		CH.16_hs gl 6552452	0.108
10	315044	AW205664	Hs.129568 ESTs	0.108
	333298		CH22_FGENES.133_4	0.108
	335157		CH22_FGENES.501_7	0.108
	333305		CH22_FGENES.137_2	0.108
	326379		CH.19_hs gl 5867327	0.108
15	335050		CH22_FGENES.482_1	0.108
	305185	AA663985	Hs.248038 major histocompatibility complex, class I; C	0.108
	335658		CH22_FGENES.590_9	0.108
	323040	AA336609	Hs.10862 ESTs	0.108
	337326		CH22_FGENES.699-6	0.108
20	339282		CH22_BA35412.GENSCAN.9-6	0.108
	321202	H54052	Hs.163639 ESTs; Weakly similar to INTERCELLULAR ADHESION MOLECULE-1 PRECURSOR [H.sapiens]	0.109
	331792	AA398968	Hs.97548 EST	0.109
	333806		CH22_FGENES.278_2	0.109
25	321325	AB033100	EST cluster (not in UniGene)	0.109
	331373	AA435513	Hs.178170 ESTs; Weakly similar to DUAL SPECIFICITY PROTEIN PHOSPHATASE 3	0.87
	328775		CH.07_hs gl 5868309	0.109
	335105		CH22_FGENES.494_10	0.109
30	300975	AI283548	Hs.149668 ESTs	0.109
	324893	T31940	EST cluster (not in UniGene)	0.109
	333397		CH22_FGENES.144_15	0.109
	338484		CH22_FGENES.831_3	0.109
	335507		CH22_FGENES.571_22	0.109
35	336373		CH22_FGENES.820_3	0.109
	338188		CH22_FGENES.717_12	0.109
	313455	AW081702	Hs.137329 ESTs	0.109
	335185		CH22_FGENES.506_4	0.109
	306814	AI066577	EST singleton (not in UniGene) with exon hit	0.109
40	311130	AI632322	Hs.195306 ESTs	0.109
	310882	AW080339	Hs.211911 ESTs	0.109
	323383	AI346359	Hs.135209 ESTs	0.11
	300212	AW135925	Hs.184552 biphenylhydrolase-like (serine hydrolase; breast epithelial mucin-assoc.	0.11
45	325675		CH.14_hs gl 5867014	0.11
	330095		CH.19_p2 gl 6015278	0.11
	331842	AA453261	Hs.99309 ESTs	0.11
	334723		CH22_FGENES.421_34	0.11
	333614		CH22_FGENES.217_9	0.11
50	337316		CH22_FGENES.692-1	0.11
	305057	AA635626	Hs.62954 ferritin; heavy polypeptide 1	0.11
	338704		CH22_EM:AC005500.GENSCAN.480-3	0.11
	335385		CH22_FGENES.543_27	0.11
	338012		CH22_EM:AC005500.GENSCAN.128-10	0.11
55	329449		CH.Y_hs gl 5868886	0.11
	338980		CH22_DA59H18.GENSCAN.2-4	0.11
	336553		CH22_FGENES.841_10	0.111
	330021		CH.16_p2 gl 6671889	0.111
	327579		CH.03_hs gl 5867824	0.111
60	333099		CH22_FGENES.79_4	0.111
	337076		CH22_FGENES.453-4	0.111
	331388	AA456852	Hs.43543 suppressor of white apricot homolog 2	0.111
	306674	AI005542	Hs.180414 heat shock 70kD protein 10 (HSC71)	0.111
	305949	AA884409	EST singleton (not in UniGene) with exon hit	0.111
65	330748	AA419217	Hs.15911 DKFZP586E1422 protein	0.111
	333780		CH22_FGENES.273_2	0.111
	323676	AI702835	EST cluster (not in UniGene)	0.111
	308952	AI868157	EST	0.111
	309338	AW026946	Hs.181165 eukaryotic translation elongation factor 1 alpha 1	0.111

	329317		CH.X_hs g 6381976	0.112
	333518		CH22_FGENES.173_3	0.112
	306982	AI127883	EST singleton (not in UniGene) with exon hit	0.112
5	336225		CH22_FGENES.728_2	0.112
	333698		CH22_FGENES.250_12	0.112
	302173	AI417947	ESTs	0.112
	335510	Hs.14068	CH22_FGENES.571_25	0.112
	328042		CH.06_hs g 5902482	0.112
10	336512		CH22_FGENES.834_7	0.112
	328541		CH.07_hs g 5868486	0.112
	311265	AW205118	ESTs	0.112
	323218	AF131846	Hs.13396 Homo sapiens clone 25028 mRNA sequence	0.112
	302002	AF013956	Hs.123085 chromobox homolog 4 (Drosophila Pc class)	0.112
15	315088	AA557351	Hs.152448 ESTs; Moderately similar to MULTIFUNCTIONAL PROTEIN ADE2	0.112
	312581	AI937242	Hs.176590 ESTs	0.112
	322246	AW384710	Hs.125258 ESTs	0.112
	333659		CH22_FGENES.241_5	0.113
	327510		CH.02_hs g 6117815	0.113
20	336520		CH22_FGENES.839_1	0.113
	336682		CH22_EM:AC005500.GENSCAN.472-1	0.113
	334508		CH22_FGENES.398_6	0.113
	322533	T59538	EST cluster (not in UniGene)	0.113
	306873	AI086929	EST singleton (not in UniGene) with exon hit	0.113
25	336040		CH22_FGENES.679_2	0.113
	303898	T23215	EST cluster (not in UniGene) with exon hit	0.113
	312011	AW294868	Hs.187226 ESTs	0.113
	335186		CH22_FGENES.506_5	0.113
	333607		CH22_FGENES.216_2	0.113
30	305549	AA773530	EST singleton (not in UniGene) with exon hit	0.113
	333686		CH22_FGENES.249_4	0.113
	334352		CH22_FGENES.376_3	0.113
	338195		CH22_EM:AC005500.GENSCAN.233-18	0.114
	333588		CH22_FGENES.206_2	0.114
35	339233		CH22_BA354112.GENSCAN.2-3	0.114
	337455		CH22_FGENES.777-1	0.114
	309101	AI825108	EST singleton (not in UniGene) with exon hit	0.114
	328522		CH.07_hs g 5868477	0.114
	323999	AI537333	Hs.252782 ESTs	0.114
40	333517		CH22_FGENES.173_2	0.114
	329935		CH.16_p2 g 6165200	0.114
	326226		CH.17_hs g 5867230	0.114
	335890		CH22_FGENES.833_4	0.114
	336715		CH22_FGENES.77-1	0.114
45	327640		CH.04_hs g 5867890	0.114
	338842		CH22_DJ246D7.GENSCAN.7-1	0.114
	306534	AA991487	EST singleton (not in UniGene) with exon hit	0.114
	336597		CH22_FGENES.266_1	0.114
	321010	Y17456	Hs.227150 Homo sapiens LSFR2 gene; last exon	0.114
50	302294	AA159213	Hs.5337 isocitrate dehydrogenase 2 (NADP+); mitochondrial	0.114
	324895	N44238	Hs.77515 inositol 1,4,5-triphosphate receptor, type 3	0.114
	327358		CH.01_hs g 6552411	0.114
	308792	AI815153	Hs.195188 glyceraldehyde-3-phosphate dehydrogenase	0.115
	325886		CH.16_hs g 5867087	0.115
	336850		CH22_FGENES.272-11	0.115
55	305858	AA863103	EST singleton (not in UniGene) with exon hit	0.115
	302569	AC004472	multiple UniGene matches	0.115
	336158		CH22_FGENES.707_2	0.115
	327866		CH.06_hs g 5868131	0.115
60	339157		CH22_DA59H18.GENSCAN.67-3	0.115
	339258		CH22_BA354112.GENSCAN.8-3	0.115
	336129		CH22_FGENES.701_17	0.115
	333684		CH22_FGENES.249_2	0.115
	309618	AW190162	Hs.184776 ribosomal protein L23a	0.115
65	312826	AA954097	Hs.127523 ESTs	0.115
	302640	AB035698	EST cluster (not in UniGene) with exon hit	0.115
	328968		CH.08_hs g 6456775	0.115
	327802		CH.06_hs g 5868158	0.115
	321927	AJ223366	EST cluster (not in UniGene)	0.115
	335962		CH22_FGENES.651_4	0.115

	334927		CH22_FGENES.460_1	0.116
	330535	U11872	Human interleukin-8 receptor type B (IL8RB) mRNA, splice variant IL8RB1	0.856
5	328591		CH.07_hs gij5868227	0.115
	334902		CH22_FGENES.452_16	0.115
	328525		CH.07_hs gij5868482	0.115
	325870		CH.16_hs gij6682492	0.116
	337522		CH22_FGENES.819-1	0.116
10	305079	AA641329	EST singleton (not in UniGene) with exon hit	0.116
	327343		CH.01_hs gij6017017	0.116
	333918		CH22_FGENES.296_7	0.116
	333600		CH22_FGENES.213_2	0.116
	335846		CH22_FGENES.623_6	0.116
15	333510		CH22_FGENES.171_4	0.116
	327629		CH.04_hs gij5867872	0.116
	333470		CH22_FGENES.161_6	0.116
	326855		CH.20_hs gij6552460	0.118
	327008		CH.21_hs gij5867684	0.117
	337480		CH22_FGENES.795-3	0.117
20	336425		CH22_FGENES.824_10	0.117
	321964	AL079687	Hs.171065 ESTs	0.117
	335651		CH22_FGENES.590_2	0.117
	308164	AJ521574	Hs.181165 eukaryotic translation elongation factor 1 alpha 1	0.117
	337927		CH22_EM:AC005500.GENSCAN.80-3	0.117
25	300341	H45095	Hs.153524 ESTs	0.117
	300154	AJ245127	Hs.179331 ESTs	0.117
	306295	AA937331	EST singleton (not in UniGene) with exon hit	0.117
	329570		CH.14_p2 gij6272129	0.117
	335612		CH22_FGENES.583_6	0.117
30	307845	AJ363450	EST singleton (not in UniGene) with exon hit	0.117
	330401	D28383	Human mRNA for ATP synthase B chain, 5'UTR (sequence from the 5'cap to the start codon)	0.117
	327127		CH.21_hs gij6682520	0.117
35	333843		CH22_FGENES.290_1	0.117
	331083	R17762	Hs.22292 ESTs	0.117
	329140		CH.X_hs gij6017060	0.117
	339338		CH22_BA354112.GENSCAN.27-3	0.117
	331974	AA464518	Hs.99616 ESTs	0.117
40	338631		CH22_EM:AC005500.GENSCAN.454-2	0.117
	330299		CH.08_p2 gij2905881	0.117
	330351		CH.09_p2 gij3056622	0.117
	305377	AA715714	Hs.181357 laminin receptor 1 (67kD; ribosomal protein SA)	0.117
	333106		CH22_FGENES.79_12	0.117
45	338514		CH22_EM:AC005500.GENSCAN.392-4	0.117
	327335		CH.01_hs gij5902477	0.117
	301970	AB028962	Hs.120245 KIAA1039 protein	0.118
	326339		CH.17_hs gij6056311	0.118
	330612	X15673	Hs.93174 Human endogenous retrovirus pHE.1 (ERV9)	0.118
50	334178		CH22_FGENES.350_6	0.118
	328008		CH.06_hs gij5902482	0.118
	329976		CH.16_p2 gij4878063	0.118
	320952	AA897432	Hs.130411 ESTs	0.118
	305621	AA789095	EST singleton (not in UniGene) with exon hit	0.118
55	337850		CH22_EM:AC005500.GENSCAN.34-3	0.118
	333626		CH22_FGENES.224_2	0.118
	337672		CH22_EM:AC000097.GENSCAN.67-1	0.118
	328803		CH.07_hs gij6004475	0.118
	325822		CH.16_hs gij5867122	0.118
	334489		CH22_FGENES.397_1	0.118
60	320638	R54768	Hs.101120 ESTs	0.118
	321932	AA569229	EST cluster (not in UniGene)	0.118
	336958		CH22_FGENES.367-1	0.118
	332082	AA800176	Hs.112345 ESTs	0.118
65	306004	AA889992	EST singleton (not in UniGene) with exon hit	0.118
	336803		CH22_FGENES.194-1	0.118
	309107	AJ925823	EST singleton (not in UniGene) with exon hit	0.118
	336859		CH22_FGENES.293-9	0.118
	337935		CH22_EM:AC005500.GENSCAN.85-6	0.118
	326492		CH.19_hs gij5867422	0.118

	327289		CH.01_hs gi 5867481	0.119
	325818		CH.14_hs gi 5682490	0.119
	310787	AW262580	Hs.159040 ESTs	0.119
5	330028		CH.16_p2 gi 6671908	0.119
	325317		CH.11_hs gi 5866878	0.119
	335279		CH22_FGENES.523_7	0.119
	331720	AA192173	Hs.221530 ESTs	0.119
	329186		CH.X_hs gi 5868711	0.119
10	316012	AA764950	Hs.119898 ESTs	0.119
	338316		CH22_EM:AC005500.GENSCAN.304-2	0.119
	326033		CH.17_hs gi 5867178	0.119
	334745		CH22_FGENES.426_3	0.119
	333051		CH22_FGENES.73_5	0.119
15	301763	R01279	EST cluster (not in UniGene) with exon hit	0.12
	304502	AA454809	Hs.172928 collagen; type I; alpha 1	0.12
	335680		CH22_FGENES.594_5	0.12
	304678	AA548556	EST singleton (not in UniGene) with exon hit	0.12
	335441		CH22_FGENES.560_4	0.12
20	336187		CH22_FGENES.717_11	0.12
	309422	AW087175	EST singleton (not in UniGene) with exon hit	0.12
	336047		CH22_FGENES.679_9	0.12
	309651	AW195850	EST singleton (not in UniGene) with exon hit	0.12
	308547	AI695385	Hs.201903 EST	0.12
25	304443	AA399444	EST singleton (not in UniGene) with exon hit	0.12
	336245		CH22_FGENES.746_3	0.12
	302703	H72333	EST cluster (not in UniGene) with exon hit	0.12
	335690		CH22_FGENES.596_5	0.12
	328941		CH.08_hs gi 6456785	0.12
30	333873		CH22_FGENES.291_9	0.12
	317246	AW105092	Hs.155690 ESTs	0.12
	339288		CH22_BA354112.GENSCAN.16-6	0.12
	337996		CH22_EM:AC005500.GENSCAN.116-3	0.12
	333304		CH22_FGENES.137_1	0.121
35	308332	AI591235	EST singleton (not in UniGene) with exon hit	0.121
	329319		CH.X_hs gi 6381976	0.121
	302086	X57138	multiple UniGene matches	0.121
	333290		CH22_FGENES.129_2	0.121
	323625	AI793080	Hs.123525 ESTs; Weakly similar to NEUTROPHIL GELATINASE-ASSOCIATED	0.121
40	330575	U64105	LIPOCALIN PRECURSOR [R.norvegicus]	0.121
	305274	AA679990	Hs.252280 Rho guanine nucleotide exchange factor (GEF) 1	0.121
	333647		Hs.181165 eukaryotic translation elongation factor 1 alpha 1	0.121
	302251	AA333340	CH22_FGENES.235_2	0.121
45	329777		EST cluster (not in UniGene) with exon hit	0.121
	333155		CH.14_p2 gi 6002090	0.121
	326122		CH22_FGENES.89_5	0.121
	335310		CH.17_hs gi 5867194	0.121
	335453		CH22_FGENES.532_3	0.121
50	305103	AA643329	CH22_FGENES.562_13	0.122
	337284		fertilin; light polypeptide	0.122
	337418		CH22_FGENES.667-2	0.122
	313073	AI963740	CH22_FGENES.758-4	0.122
	303759	AW504164	Hs.46826 ESTs	0.122
	300017		EST cluster (not in UniGene) with exon hit	0.122
55		M33187	AFFX control: GAPDH	0.122
	316725	AW135084	Hs.127264 ESTs	0.122
	330738	AA293153	Hs.120980 nuclear receptor co-repressor 2	0.122
	336466		CH22_FGENES.829_25	0.122
60	335956		CH22_FGENES.647_3	0.122
	315308	AA780584	Hs.189053 ESTs	0.122
	338925		CH22_DJ32110.GENSCAN.14-3	0.122
	334969		CH22_FGENES.466_2	0.122
	322050	AL137589	EST cluster (not in UniGene)	0.122
65	339084		CH22_DA59H18.GENSCAN.38-2	0.122
	338323		CH22_EM:AC005500.GENSCAN.306-2	0.122
	337003		CH22_FGENES.419-7	0.122
	325470		CH.12_hs gi 6017034	0.123
	336503		CH22_FGENES.833_10	0.123
	330786	D60374	Hs.258712 EST	0.123

	329446		CH.Y_hs gij586886	0.123
	303326	AA229433	Hs.222634 ESTs; Moderately similar to ubiquitin-like protein / ribosomal protein S30	0.123
5	309067	AI916313	Hs.212768 EST	0.123
	317464	AA968472	Hs.130463 ESTs	0.123
	328755		CH.07_hs gij5868301	0.123
	328036		CH.17_hs gij5867178	0.123
	327208		CH.01_hs gij5867447	0.123
10	326124		CH.17_hs gij5916395	0.123
	327509		CH.02_hs gij6117815	0.123
	338398		CH22_EM.AC005500.GENSCAN.336-5	0.123
	304652	AA527782	Hs.84298 CD74 antigen (Invariant polypeptide of major histocompatibility complex; class II antigen-associated)	0.123
15	335797		CH22_FGENES.612_6	0.124
	336714		CH22_FGENES.76-29	0.124
	327204		CH.01_hs gij5867447	0.124
	331881	AA430672	Hs.123778 ESTs	0.124
	306971	AI126509	EST singleton (not in UniGene) with exon hit	0.124
20	336174		CH22_FGENES.710_1	0.124
	338126		CH22_FGENES.701_13	0.124
	329129		CH.X_hs gij5588026	0.124
	303049	AW407562	EST cluster (not in UniGene) with exon hit	0.124
	335778		CH22_FGENES.607_14	0.124
25	336601		CH22_FGENES.369_2	0.124
	334340		CH22_FGENES.375_17	0.124
	337436		CH22_FGENES.767-1	0.124
	306013	AA896990	EST singleton (not in UniGene) with exon hit	0.124
	339213		CH22_FF113D11.GENSCAN.6-8	0.124
30	335355		CH22_FGENES.541_2	0.124
	336552		CH22_FGENES.841_9	0.124
	336384		CH22_FGENES.822_4	0.124
	310485	AI286202	Hs.149800 ESTs	0.125
	335840		CH22_FGENES.622_3	0.125
35	338444		CH22_FGENES.827_10	0.125
	315703	N38070	EST cluster (not in UniGene)	0.125
	327763		CH.05_hs gij5867961	0.125
	336383		CH22_FGENES.822_3	0.125
	333496		CH22_FGENES.168_6	0.125
40	328662		CH.07_hs gij6004473	0.125
	338986		CH22_DA58H18.GENSCAN.5-1	0.125
	328311		CH.07_hs gij5868371	0.125
	337241		CH22_FGENES.644-2	0.125
	336833		CH22_FGENES.350-7	0.125
45	313483	AW284432	Hs.144252 ESTs	0.125
	326116		CH.17_hs gij5867193	0.125
	330450	HG363-HT363	Epidermal Growth Factor Receptor-Related Protein	0.125
	307491	AI268539	EST singleton (not in UniGene) with exon hit	0.125
	331852	AA418988	Hs.98314 Homo sapiens mRNA; cDNA DKFZp586L0120 (from clone DKFZp586L0120)	0.125
50	330462	HG944-HT944	Dopamine Receptor D4	0.125
	304410	AA284508	EST singleton (not in UniGene) with exon hit	0.125
	336385		CH22_FGENES.822_5	0.125
	336793		CH22_FGENES.176-3	0.125
	326243		CH.17_hs gij5867261	0.125
55	327266		CH.01_hs gij5867462	0.125
	320753	AF070579	Hs.181544 Homo sapiens clone 24487 mRNA sequence	0.125
	336960		CH22_FGENES.369-5	0.125
	329667		CH.14_p2 gij6272129	0.125
60	328168		CH.06_hs gij5868071	0.125
	336534		CH22_FGENES.839_16	0.125
	339289		CH22_BA35412.GENSCAN.16-9	0.126
	309230	AI970747	EST singleton (not in UniGene) with exon hit	0.126
	339190		CH22_FF113D11.GENSCAN.1-2	0.126
	337086		CH22_FGENES.458-14	0.126
65	318233	R21054	Hs.211522 ESTs	0.126
	339396		CH22_BA232E17.GENSCAN.6-8	0.126
	331930	AA449077	Hs.179765 Homo sapiens mRNA; cDNA DKFZp586H1821 (from clone DKFZp586H1821)	0.126
	308099	AI475914	EST singleton (not in UniGene) with exon hit	0.126



	338477		CH22_EM:AC005500.GENSCAN.373-5	0.126
	334286		CH22_FGENES.369_16	0.126
	317245	AI025039	Hs.131732 ESTs	0.126
5	335249		CH22_FGENES.516_10	0.126
	333327		CH22_FGENES.138_20	0.126
	304240	AA009802	EST singleton (not in UniGene) with exon hit	0.126
	335464		CH22_FGENES.562_26	0.126
	335236		CH22_FGENES.515_8	0.126
	334154		CH22_FGENES.340_4	0.126
10	309257	AI984183	EST singleton (not in UniGene) with exon hit	0.126
	310015	AI220122	Hs.201981 ESTs; Weakly similar to breast carcinoma-associated antigen [H.sapiens]	0.126
	328280		CH.07_hs gi 5868352	0.126
15	305744	AA831819	EST singleton (not in UniGene) with exon hit	0.126
	327430		CH.02_hs gi 5867754	0.126
	328323		CH.07_hs gi 5868373	0.126
	333274		CH22_FGENES.123_2	0.126
	337193		CH22_FGENES.575-3	0.127
	334820		CH22_FGENES.437_2	0.127
20	328706		CH.07_hs gi 5868270	0.127
	331228	W67267	Hs.174911 ESTs	0.127
	307205	AI192479	EST singleton (not in UniGene) with exon hit	0.127
	337123		CH22_FGENES.519-3	0.127
	326201		CH.17_hs gi 5867216	0.127
25	335276		CH22_FGENES.523_2	0.127
	331202	T81115	Hs.191136 ESTs	0.127
	330532	U03187	Hs.121544 Interleukin 12 receptor; beta 1	0.127
	321235	N49521	EST cluster (not in UniGene)	0.127
30	301743	F12605	Hs.204529 ESTs; Weakly similar to reverse transcriptase [H.sapiens]	0.127
	328175		CH.06_hs gi 5868073	0.127
	306407	AA971985	EST singleton (not in UniGene) with exon hit	0.127
	327145		CH.01_hs gi 5867548	0.127
	327649		CH.04_hs gi 5867899	0.127
	335142		CH22_FGENES.498_12	0.127
35	333909		CH22_FGENES.295_2	0.127
	330608	X04325	Hs.2679 gap junction protein; beta 1; 32kD (connexin 32; Charcot-Marie-Tooth neuropathy, X-linked)	0.127
	330158		CH.21_p2 gi 6580367	0.127
40	320153	AF064594	Hs.120360 phospholipase A2; group VI	0.127
	314407	AA098835	Hs.224432 ESTs	0.127
	333383		CH22_FGENES.143_22	0.127
	320663	AI734242	Hs.244473 ESTs	0.128
	326233		CH.17_hs gi 5867232	0.128
	326598		CH.20_hs gi 5867634	0.128
45	335174		CH22_FGENES.504_4	0.128
	319843	H29920	Hs.99486 ESTs; Weakly similar to aralar1 [H.sapiens]	0.128
	335458		CH22_FGENES.562_18	0.128
	332997		CH22_FGENES.58_4	0.128
	334188		CH22_FGENES.352_3	0.128
50	329759		CH.14_p2 gi 6048280	0.128
	330348		CH.09_p2 gi 4544475	0.128
	326958		CH.21_hs gi 6468936	0.128
	305263	AA679467	EST singleton (not in UniGene) with exon hit	0.128
55	337693		CH22_EM:AC000097.GENSCAN.78-14	0.128
	326812		CH.20_hs gi 6682504	0.128
	333237		CH22_FGENES.108_7	0.128
	333699		CH22_FGENES.250_13	0.128
	311496	AI768677	Hs.209888 ESTs; Weakly similar to phosphatidylserine synthase-2 [M.musculus]	0.128
60	336499		CH22_FGENES.833_4	0.128
	320087	AF032387	Hs.113265 small nuclear RNA activating complex; polypeptide 4; 190kD	0.128
	309989	AI184186	Hs.197813 ESTs	0.128
	301490	AW298468	Hs.250461 ESTs	0.128
	337011		CH22_FGENES.427-6	0.128
65	315052	AA876910	Hs.134427 ESTs	0.128
	301611	W22172	Hs.59038 ESTs	0.128
	336497		CH22_FGENES.833_2	0.129
	302068	Y16280	Hs.132049 endothelin type b receptor-like protein 2	0.129
	334502		CH22_FGENES.397_18	0.129

	304332	AA158884	EST singleton (not in UniGene) with exon hit	0.129
	304522	AA465405	EST singleton (not in UniGene) with exon hit	0.129
	312407	R46180	Hs.153485 ESTs	0.129
	310098	AI685841	Hs.161354 ESTs	0.129
5	301119	AF142579	EST cluster (not in UniGene) with exon hit	0.129
	309268	AI985821	Hs.62954 ferritin; heavy polypeptide 1	0.129
	330689	H42142	Hs.226396 DEAD/H (Asp-Glu-Ala-Asp/His) box polypeptide 19 (Dbp5; yeast; homolog)	0.129
	336949		CH22_FGENES.361-4	0.129
10	330115		CH.19_p2 gjl6015202	0.129
	339212		CH22_FF113D11.GENSCAN.6-7	0.129
	326951		CH.21_hs gjl6004446	0.129
	305165	AA662939	EST singleton (not in UniGene) with exon hit	0.129
	308238	AI559492	EST singleton (not in UniGene) with exon hit	0.129
15	337140		CH22_FGENES.537-5	0.13
	321758	U29112	EST cluster (not in UniGene)	0.13
	304619	AA515554	Hs.119598 ribosomal protein L3	0.13
	312469	AA745289	Hs.173088 ESTs	0.13
	339017		CH22_DA59H18.GENSCAN.20-6	0.13
20	330116		CH.19_p2 gjl6015202	0.13
	333312		CH22_FGENES.138_4	0.13
	338004		CH22_EM:AC005500.GENSCAN.121-1	0.13
	314141	AA232134	Hs.190028 ESTs	0.13
	300509	AI239845	Hs.128494 ESTs; Weakly similar to EG:9587.2 [D.melanogaster]	0.13
25	338530		CH22_EM:AC005500.GENSCAN.398-11	0.13
	335968		CH22_FGENES.652_1	0.13
	314121	AI732100	Hs.187619 ESTs	0.13
	337593		CH22_C20H12.GENSCAN.6-8	0.13
	332881		CH22_FGENES.33_1	0.13
30	305836	AA858043	EST singleton (not in UniGene) with exon hit	0.13
	339059		CH22_DA59H18.GENSCAN.30-5	0.13
	305610	AA782319	EST singleton (not in UniGene) with exon hit	0.13
	305852	AA862455	EST singleton (not in UniGene) with exon hit	0.13
	327409		CH.02_hs gjl5867750	0.13
35	312751	AI613089	Hs.164178 ESTs	0.13
	308726	AI799268	Hs.209929 EST	0.13
	325961		CH.16_hs gjl5867147	0.13
	311159	AW025919	Hs.187636 ESTs	0.13
	322715	AA057230	Hs.182135 ESTs	0.13
40	336441		CH22_FGENES.827_7	0.13
	336339		CH22_FGENES.814_12	0.13
	306911	AI095365	EST singleton (not in UniGene) with exon hit	0.13
	333613		CH22_FGENES.217_8	0.13
	338489		CH22_EM:AC005500.GENSCAN.384-17	0.131
45	326804		CH.21_hs gjl5867684	0.131
	337337		CH22_FGENES.717-1	0.131
	326752		CH.20_hs gjl5867615	0.131
	303977	AW512978	EST singleton (not in UniGene) with exon hit	0.131
	301373	AA595235	EST cluster (not in UniGene) with exon hit	0.131
50	338448		CH22_EM:AC005500.GENSCAN.359-22	0.131
	333774		CH22_FGENES.272_5	0.131
	332986		CH22_FGENES.54_8	0.131
	335362		CH22_FGENES.541_12	0.131
	335896		CH22_FGENES.635_4	0.131
55	337825		CH22_EM:AC005500.GENSCAN.13-19	0.131
	325257		CH.11_hs gjl5866895	0.131
	331188	T50240	Hs.167837 ESTs	0.131
	330645	Y08302	Hs.144879 dual specificity phosphatase 9	0.131
	331760	AA292721	Hs.154434 ESTs; Weakly similar to unknown [H.sapiens]	0.131
60	322995	AA513829	Hs.29797 ribosomal protein L10	0.131
	335497		CH22_FGENES.571_5	0.131
	334824		CH22_FGENES.437_6	0.131
	319480	R06933	Hs.184221 ESTs	0.131
	334842		CH22_FGENES.439_21	0.131
65	333335		CH22_FGENES.139_4	0.131
	317252	AA905178	Hs.130124 ESTs	0.131
	329034		CH.X_hs gjl5868561	0.131
	305186	AA664230	EST singleton (not in UniGene) with exon hit	0.131
	335755		CH22_FGENES.604_4	0.131

	302143	H15270	Hs.189847	putative neuronal cell adhesion molecule	0.131
	334939			CH22_FGENES.465_3	0.131
	318994	C15110	Hs.17802	ESTs	0.131
5	334498			CH22_FGENES.397_14	0.131
	333413			CH22_FGENES.146_2	0.132
	329676			CH.14_p2 gi 5872128	0.132
	327277			CH.01_hs gi 5867473	0.132
	305022	AA627416		EST singleton (not in UniGene) with exon hit	0.132
	336805			CH22_FGENES.196-3	0.132
10	320121	T93657		EST cluster (not in UniGene)	0.132
	334761			CH22_FGENES.428_10	0.132
	339400			CH22_BA232E17.GENSCAN.7-6	0.132
	330301			CH.06_p2 gi 2905862	0.132
15	316822	AA827691	Hs.129967	ESTs; Weakly similar to neuronal thread protein	
				AD7c-NTP [H.sapiens]	0.132
	328020			CH.06_hs gi 5802482	0.132
	325327			CH.11_hs gi 5866875	0.132
	321163	AA209530		EST cluster (not in UniGene)	0.132
	336393			CH22_FGENES.823_5	0.132
20	325905			CH.16_hs gi 5867104	0.132
	305237	AA676286	Hs.2186	eukaryotic translation elongation factor 1 gamma	0.132
	339046			CH22_DA59H18.GENSCAN.28-6	0.132
	325375			CH.12_hs gi 5866920	0.132
25	333961			CH22_FGENES.304_7	0.132
	335450			CH22_FGENES.562_8	0.133
	302286	R58438		EST cluster (not in UniGene) with exon hit	0.133
	335116			CH22_FGENES.496_3	0.133
	327333			CH.01_hs gi 5902477	0.133
30	308070	AI470948		EST singleton (not in UniGene) with exon hit	0.133
	308311	AI581855		EST singleton (not in UniGene) with exon hit	0.133
	320813	AW360847	Hs.208839	ESTs	0.133
	323665	AW248307		EST cluster (not in UniGene)	0.133
	328318			CH.07_hs gi 5868373	0.133
35	320603	R51419		EST cluster (not in UniGene)	0.133
	332791			CH22_FGENES.3_1	0.133
	314976	AA524725	Hs.162108	ESTs	0.133
	303309	AL134164	Hs.224868	ESTs	0.133
	320581	R39753	Hs.170187	ESTs	0.133
	333944			CH22_FGENES.302_2	0.133
40	317992	AI733512	Hs.130901	ESTs	0.133
	303935	F02383	Hs.26492	beta-1,3-glucuronyltransferase 3 (glucuronosyltransferase I)	0.133
	336659			CH22_FGENES.36-5	0.133
	338887			CH22_DJ32110.GENSCAN.6-10	0.133
45	305273	AA679979	Hs.181165	eukaryotic translation elongation factor 1 alpha 1	0.133
	333566			CH22_FGENES.183_2	0.134
	316952	AW450033	Hs.163312	ESTs	0.134
	333818			CH22_FGENES.283_1	0.134
	328687			CH.07_hs gi 5868262	0.134
50	302879	H11802		EST cluster (not in UniGene) with exon hit	0.134
	336557			CH22_FGENES.842_2	0.134
	335222			CH22_FGENES.513_5	0.134
	338094			CH22_EM:AC005500.GENSCAN.178-3	0.134
	337384			CH22_FGENES.745-1	0.134
55	327360			CH.01_hs gi 5552411	0.134
	328132			CH.06_hs gi 5868038	0.134
	323604	AI751438	Hs.182827	ESTs; Weakly similar to !!!! ALU SUBFAMILY SQ	
				WARNING ENTRY !!!!	0.134
	337591			CH22_C20H12.GENSCAN.6-6	0.134
60	307018	AI140639		EST singleton (not in UniGene) with exon hit	0.134
	326896			CH.21_hs gi 5867680	0.134
	333479			CH22_FGENES.163_5	0.134
	337915			CH22_EM:AC005500.GENSCAN.61-3	0.134
	335110			CH22_FGENES.494_18	0.134
	333481			CH22_FGENES.163_9	0.134
65	327512			CH.02_hs gi 6117815	0.134
	300096	AW328639	Hs.83575	ESTs; Weakly similar to ZC328.3 [C.elegans]	0.134
	330163			CH.02_p2 gi 6042042	0.135
	335752			CH22_FGENES.604_1	0.135
	334857			CH22_FGENES.443_1	0.135

	301872	H84730	EST cluster (not in UniGene) with exon hit	0.135
	337529		CH22_FGENES.823-29	0.135
	335734		CH22_FGENES.601_4	0.135
	337551		CH22_FGENES.847-8	0.135
5	309078	AI920965	Hs.77961 major histocompatibility complex; class I; B	0.135
	335513		CH22_FGENES.571_28	0.135
	339078		CH22_DA59H18.GENSCAN.37-6	0.135
	321907	N56660	Hs.148722 ESTs; Weakly similar to large tumor suppressor 1 [H.sapiens]	0.135
	337189		CH22_FGENES.571-32	0.135
10	329635		CH.12_p2 gii5302817	0.135
	308601	AI719930	EST singleton (not in UniGene) with exon hit	0.135
	305020	AA627248	Hs.2064 vimentin	0.135
	333894		CH22_FGENES.293_1	0.135
15	322465	AA137152	Hs.3784 ESTs; Highly similar to phosphoserine aminotransferase [H.sapiens]	0.135
	305601	AA780975	EST singleton (not in UniGene) with exon hit	0.135
	332186	H10781	Hs.141051 ESTs; Moderately similar to !!! ALU SUBFAMILY SB WARNING ENTRY	0.135
	327822		CH.05_hs gii5867968	0.135
20	310087	AI393914	Hs.160624 ESTs; Weakly similar to similar to CR16; SH3 domain binding protein	0.135
	328752		CH.07_hs gii5868298	0.135
	337611		CH22_C20H12.GENSCAN.19-4	0.135
	334470		CH22_FGENES.394_1	0.136
25	335115		CH22_FGENES.496_2	0.136
	328730		CH.07_hs gii5868289	0.136
	330350		CH.09_p2 gii3056622	0.136
	336971		CH22_FGENES.378-6	0.136
	308258	AI565612	EST singleton (not in UniGene) with exon hit	0.136
30	326745		CH.20_hs gii5867611	0.136
	335440		CH22_FGENES.560_3	0.136
	320257	AA330746	EST cluster (not in UniGene)	0.136
	328677		CH.07_hs gii5868256	0.136
	329731		CH.14_p2 gii6065783	0.136
35	315950	AA700553	Hs.206974 ESTs	0.136
	330049		CH.17_p2 gii4567182	0.136
	337070		CH22_FGENES.448-3	0.136
	304095	H11324	Hs.31059 EST	0.136
40	309304	AW005527	Hs.232820 EST	0.136
	333458		CH22_FGENES.157_7	0.136
	329899		CH.15_p2 gii6563505	0.136
	322202	AI275056	Hs.200133 ESTs	0.136
	333991		CH22_FGENES.310_15	0.136
45	318617	AW247252	Hs.75514 nucleoside phosphorylase	0.136
	310623	AI341586	Hs.195588 ESTs	0.136
	330489	M23323	Hs.3003 CD3E antigen; epsilon polypeptide (TTT3 complex)	0.136
	309646	AW194694	EST singleton (not in UniGene) with exon hit	0.136
	331068	R00071	Hs.191199 ESTs	0.136
	334285		CH22_FGENES.369_15	0.136
50	332178	F13689	Hs.100725 EST	0.136
	305724	AA827608	EST singleton (not in UniGene) with exon hit	0.136
	303158	AL138110	Hs.8594 Homo sapiens mRNA containing (CAG) <sub>4</sub> repeat; clone CZ-CAG-7	0.136
	334543		CH22_FGENES.403_8	0.136
55	335384		CH22_FGENES.543_26	0.136
	336527		CH22_FGENES.839_8	0.136
	334951		CH22_FGENES.465_20	0.136
	325882		CH.16_hs gii5867087	0.137
	305134	AA653159	EST singleton (not in UniGene) with exon hit	0.137
	307058	AI148709	EST singleton (not in UniGene) with exon hit	0.137
60	331943	AA453418	Hs.178272 ESTs	0.137
	331116	R44780	Hs.22634 ESTs	0.137
	306094	AA908877	EST singleton (not in UniGene) with exon hit	0.137
	333561		CH22_FGENES.180_18	0.137
65	321439	H61962	EST cluster (not in UniGene)	0.137
	324594	AA497090	EST cluster (not in UniGene)	0.137
	337926		CH22_EM:AC005500.GENSCAN.77-4	0.137
	337353		CH22_FGENES.726-1	0.137
	331836	AA412295	Hs.104774 EST	0.137
	308981	AI873242	EST singleton (not in UniGene) with exon hit	0.137

	329424		CH.Y_hs g 5868879	0.137
	325829		CH.15_hs g 5867052	0.137
	331845	AA416863	Hs.98183 ESTs	0.137
	333854		CH22_FGENES.290_13	0.137
5	306591	AI000248	EST singleton (not in UniGene) with exon hit	0.137
	328948		CH.08_hs g 8456765	0.137
	338935		CH22_DJ32110.GENSCAN.18-12	0.137
	325960		CH.16_hs g 5867147	0.137
	328377		CH.07_hs g 5868390	0.138
10	308851	AI829820	EST singleton (not in UniGene) with exon hit	0.138
	314620	AA424352	Hs.210586 ESTs	0.138
	337592		CH22_C20H12.GENSCAN.6-7	0.138
	338684		CH22_EM:AC005500.GENSCAN.472-3	0.138
	331800	AA400498	Hs.97543 ESTs	0.138
15	304587	AA505535	EST singleton (not in UniGene) with exon hit	0.138
	333981		CH22_FGENES.310_4	0.138
	332452	AA040369	Hs.11170 SYT interacting protein	0.138
	305752	AA835278	EST singleton (not in UniGene) with exon hit	0.138
	311947	T65554	Hs.251591 EST	0.138
20	333783		CH22_FGENES.273_5	0.138
	337406		CH22_FGENES.754-14	0.138
	327976		CH.06_hs g 5868212	0.138
	325593		CH.13_hs g 5866992	0.138
	339425		CH22_DJ579N16.GENSCAN.14-4	0.138
25	304475	AA428879	EST singleton (not in UniGene) with exon hit	0.138
	309488	AW131104	EST singleton (not in UniGene) with exon hit	0.138
	337532		CH22_FGENES.827-6	0.138
	317234	AA904448	Hs.126368 ESTs	0.138
	312261	AA854425	Hs.144455 ESTs	0.138
30	328927		CH.08_hs g 5868500	0.138
	336424		CH22_FGENES.824_9	0.138
	326667		CH.20_hs g 6552455	0.138
	325988		CH.16_hs g 5867064	0.138
	318448	AW300287	EST cluster (not in UniGene)	0.139
35	336511		CH22_FGENES.834_6	0.139
	335204		CH22_FGENES.508_13	0.139
	303244	AA147472	EST cluster (not in UniGene) with exon hit	0.139
	330870	AA115804	Hs.187593 ESTs	0.139
	329376		CH.X_hs g 5868859	0.139
40	304703	AA563898	EST singleton (not in UniGene) with exon hit	0.139
	333653		CH22_FGENES.239_2	0.139
	306799	AI051696	EST singleton (not in UniGene) with exon hit	0.139
	304872	AA595289	EST singleton (not in UniGene) with exon hit	0.139
	330812	AA013001	Hs.60563 ESTs	0.139
45	329568		CH.10_p2 g 3962490	0.139
	319210	AA253074	Hs.146281 ESTs	0.139
	334320		CH22_FGENES.374_5	0.139
	300860	AI916949	Hs.149748 ESTs; Weakly similar to weak similarity to collagens [C.elegans]	0.139
	305868	AA884533	EST singleton (not in UniGene) with exon hit	0.139
50	312943	AA984384	Hs.119064 ESTs	0.139
	330523	M89439	Hs.83958 transducin-like enhancer of split 4; homolog of Drosophila E(spt1)	0.139
	312708	AI076204	Hs.135440 ESTs	0.139
	309366	AW072970	EST singleton (not in UniGene) with exon hit	0.139
	303273	AA316069	EST cluster (not in UniGene) with exon hit	0.139
55	317484	AW274696	Hs.143921 ESTs	0.139
	333239		CH22_FGENES.111_1	0.139
	307126	AI184951	EST singleton (not in UniGene) with exon hit	0.139
	316813	AA826505	Hs.124517 ESTs	0.139
	331746	AA281365	Hs.121640 ESTs; Weakly similar to KIAA0386 [H.sapiens]	0.139
60	308558	AI700145	Hs.172182 poly(A)-binding protein; cytoplasmic 1	0.139
	310784	AW086142	Hs.159017 ESTs	0.139
	323831	AA335715	Hs.200299 ESTs	0.139
	307692	AI318342	EST singleton (not in UniGene) with exon hit	0.139
	310570	AI318327	EST cluster (not in UniGene)	0.139
65	327934		CH.08_hs g 5868184	0.139
	305232	AA670052	Hs.195188 glyceraldehyde-3-phosphate dehydrogenase	0.139
	334756		CH22_FGENES.428_5	0.139
	331938	AA451867	Hs.99255 ESTs	0.139
	301393	AI474722	Hs.150898 ESTs; Weakly similar to KIAA0644 protein [H.sapiens]	0.139

5	312005	T78450	Hs.13941	ESTs	0.139
	338431			CH22_EM:AC005500.GENSCAN.351-4	0.14
	331214	T90496	Hs.16757	ESTs	0.14
	333601			CH22_FGENES.213_4	0.14
	323481	AA278449	Hs.137429	ESTs	0.14
10	336911			CH22_FGENES.344-4	0.14
	338157			CH22_EM:AC005500.GENSCAN.209-5	0.14
	327845			CH.05_hs gij5531862	0.14
	319109	Z45662	Hs.90797	Homo sapiens clone 23620 mRNA sequence	0.14
	334763			CH22_FGENES.428_12	0.14
15	329384			CH.X_hs gij5868869	0.14
	302996	AF054663		EST cluster (not in UniGene) with exon hit	0.14
	323751	AW452656	Hs.209824	ESTs	0.14
	329916			CH.16_p2 gij6223624	0.14
	301993	N49826	Hs.18602	ESTs	0.14
20	338129			CH22_EM:AC005500.GENSCAN.197-2	0.14
	325704			CH.14_hs gij5867028	0.14
	335656			CH22_FGENES.590_7	0.14
	331673	W72366	Hs.40033	ESTs	0.14
	316807	AI018331	Hs.172444	ESTs; Highly similar to transcription regulator [M.musculus]	0.14
25	310743	AW449754	Hs.158665	ESTs	0.14
	326941			CH.21_hs gij6004446	0.14
	328809			CH.07_hs gij5868327	0.14
	323855	AI653164	Hs.128665	ESTs	0.14
	304705	AA564064		EST singleton (not in UniGene) with exon hit	0.14
30	325666			CH.14_hs gij6469822	0.14
	333747			CH22_FGENES.265_6	0.14
	318287	AW015616	Hs.143321	ESTs	0.141
	332972			CH22_FGENES.51_5	0.141
	305704	AA825266		EST singleton (not in UniGene) with exon hit	0.141
35	315699	AW182805	Hs.189183	ESTs; Weakly similar to Nod1 [H.sapiens]	0.141
	327296			CH.01_hs gij5867492	0.141
	336400			CH22_FGENES.823_15	0.141
	321033	H26214	Hs.20733	ESTs; Weakly similar to !!! ALU SUBFAMILY SX WARNING ENTRY	0.141
	316522	AA75995	Hs.122910	ESTs	0.141
40	335715			CH22_FGENES.599_15	0.141
	335959			CH22_FGENES.650_2	0.141
	333259			CH22_FGENES.118_7	0.141
	337382			CH22_FGENES.744-8	0.141
	322346	AA227618	Hs.10882	HMG-box containing protein 1	0.141
45	325378			CH.12_hs gij5866920	0.141
	338500			CH22_EM:AC005500.GENSCAN.390-1	0.141
	338460			CH22_EM:AC005500.GENSCAN.362-5	0.141
	315279	AW511138	Hs.256581	ESTs	0.141
	314439	AI539443	Hs.137447	ESTs	0.141
50	333624			CH22_FGENES.222_3	0.141
	329237			CH.X_hs gij5868729	0.141
	330117			CH.19_p2 gij6015201	0.141
	338017			CH22_EM:AC005500.GENSCAN.134-1	0.141
	337854			CH22_EM:AC005500.GENSCAN.38-12	0.142
55	329984			CH.16_p2 gij4646193	0.142
	305004	AA622328	Hs.162782	EST	0.142
	302615	N40373		EST cluster (not in UniGene) with exon hit	0.142
	327823			CH.05_hs gij5867868	0.142
	326753			CH.20_hs gij5867616	0.142
60	301201	AA904482	Hs.197775	ESTs	0.142
	334303			CH22_FGENES.373_6	0.142
	326453			CH.19_hs gij5867399	0.142
	311050	AI884581	Hs.215477	ESTs	0.142
	308740	AI802711	Hs.210337	EST; Weakly similar to aldolase A [H.sapiens]	0.142
65	331003	H63959	Hs.142722	ESTs	0.142
	338010			CH22_EM:AC005500.GENSCAN.128-8	0.142
	336326			CH22_FGENES.812_4	0.142
	318100	R44308	Hs.242302	ESTs	0.142
	320641	R55421		EST cluster (not in UniGene)	0.142
	325855			CH.16_hs gij5867067	0.142
	330425	HG1728-HT1734		Non-Specific Cross Reacting Antigen (Gb:D90277), Alt. Splice Form 2	0.142

5	324583	AA425411	Hs.22581	ESTs	0.142
	326268			CH.17_hs gjl5867267	0.142
	331390	AA460341	Hs.45008	ESTs	0.142
	338904			CH22_DJ32110.GENSCAN.10-16	0.143
	333096			CH22_FGENES.79_1	0.143
10	331919	AA446869	Hs.119316	ESTs	0.143
	312214	AI248004	Hs.125187	ESTs	0.143
	323198	AW179174	Hs.7984	ESTs	0.143
	316107	AI204001	Hs.184014	ribosomal protein L31	0.143
	301335	AA885317	Hs.190511	ESTs	0.143
15	337392			CH22_FGENES.747-3	0.143
	325543			CH.12_hs gjl6682452	0.143
	305903	AA873085		EST singleton (not in UniGene) with exon hit	0.143
	332707	L35594	Hs.174185	phosphodiesterase I/nucleotide pyrophosphatase 2 (autotaxin)	0.143
	337913			CH22_EM:AC005500.GENSCAN.59-10	0.143
20	301436	AA961061	Hs.131696	ESTs	0.143
	335078			CH22_FGENES.486_5	0.143
	338451			CH22_EM:AC005500.GENSCAN.359-39	0.143
	302777	AJ230640		EST cluster (not in UniGene) with exon hit	0.143
	330464	J03068	Hs.78223	N-acylaminoacyl-peptide hydrolase	0.143
25	330988	H41411	Hs.33855	ESTs	0.143
	328939			CH.08_hs gjl6004481	0.143
	308015	AI440174	Hs.228907	EST; Weakly similar to GUANINE NUCLEOTIDE-BINDING PROTEIN BETA SUBUNIT-LIKE PROTEIN	0.143
				12.3 [H.sapiens]	0.143
	328504			CH.07_hs gjl5888471	0.143
30	332599	AA402891	Hs.32951	solute carrier family 29 (nucleoside transporters); member 2	0.143
	335744			CH22_FGENES.601_15	0.143
	322394	AF077208		EST cluster (not in UniGene)	0.143
	323892	AL042661		EST cluster (not in UniGene)	0.143
	318443	AI939323	Hs.157714	ESTs; Weakly similar to NEURONAL ACETYLCHOLINE RECEPTOR PROTEIN; ALPHA-5 CHAIN PRECURSOR	0.143
35				[H.sapiens]	0.143
	336568			CH22_FGENES.843_7	0.143
	330958	H08815	Hs.159824	EST	0.143
	327672			CH.04_hs gjl5867843	0.143
	335900			CH22_FGENES.635_8	0.144
40	336044			CH22_FGENES.679_6	0.144
	318845	AI815951	Hs.33183	ESTs; Weakly similar to estrogen-responsive finger protein; efp [H.sapiens]	0.144
	333483			CH22_FGENES.165_2	0.144
	333337			CH22_FGENES.139_6	0.144
	305993	AA889197		EST singleton (not in UniGene) with exon hit	0.144
45	335719			CH22_FGENES.599_22	0.144
	325682			CH.14_hs gjl8138923	0.144
	327350			CH.01_hs gjl6249563	0.144
	339291			CH22_BA35412.GENSCAN.18-1	0.144
	326358			CH.18_hs gjl5867283	0.144
50	330316			CH.08_p2 gjl6007576	0.144
	308150	AI498346	Hs.174131	ribosomal protein L6	0.144
	338065			CH22_EM:AC005500.GENSCAN.164-1	0.144
	339009			CH22_DA59H18.GENSCAN.18-7	0.144
	327776			CH.05_hs gjl5867964	0.145
55	336664			CH22_FGENES.41-8	0.145
	321821	AF070619		EST cluster (not in UniGene)	0.145
	319346	T70147	Hs.12024	ESTs	0.145
	304265	AA062892		EST singleton (not in UniGene) with exon hit	0.145
	303818	Z45986	Hs.250178	copine II	0.145
60	327498			CH.02_hs gjl6017023	0.145
	335227			CH22_FGENES.513_13	0.145
	339022			CH22_DA59H18.GENSCAN.22-1	0.145
	302597	H55681	Hs.33026	ESTs; Weakly similar to similar to Enterococcus faecalis TRAB [C.elegans]	0.145
				Hs.201811	EST
65	308550	AI697008		Homo sapiens chromosome 19; cosmid R29381	0.145
	302175	AA262760	Hs.156015	EST cluster (not in UniGene) with exon hit	0.145
	303252	AA156760		CH22_FGENES.757-2	0.145
	337414			EST cluster (not in UniGene)	0.145
	310382	AI734009		CH.X_hs gjl5868806	0.145
	329333				0.145

	336857		CH22_FGENES.291-7	0.145
	332565	AA234896	Hs.25272 E1A binding protein p300	0.145
	318634	AI928098	Hs.156832 ESTs	0.145
5	336318		CH22_FGENES.801_1	0.145
	310980	AI923551	Hs.170843 ESTs	0.145
	335346		CH22_FGENES.537_2	0.145
	331196	T65416	Hs.12826 ESTs	0.145
	337607		CH22_C20H12.GENSCAN.17-3	0.146
10	331208	T84096	Hs.15284 ESTs	0.146
	301793	T80698	EST cluster (not in UniGene) with exon hit	0.146
	319590	AA210878	EST cluster (not in UniGene)	0.146
	311394	AI695374	Hs.256231 ESTs	0.146
	324773	AA632554	Hs.163401 ESTs	0.146
15	324841	AI142359	Hs.155316 ESTs	0.146
	332260	N70088	Hs.138467 ESTs	0.146
	329276		CH.X_hs gjl5868762	0.146
	335887		CH22_FGENES.633_1	0.146
	338294		CH22_EM:AC005500.GENSCAN.297-1	0.146
20	336993		CH22_FGENES.409-4	0.146
	334135		CH22_FGENES.336_2	0.146
	326251		CH.17_hs gjl5867283	0.146
	337398		CH22_FGENES.749-1	0.146
	339167		CH22_DA59H18.GENSCAN.69-8	0.146
25	316838	AW135418	Hs.161210 ESTs	0.146
	325313		CH.11_hs gjl5866865	0.146
	331047	N66918	Hs.32205 ESTs	0.146
	323915	AL043362	EST cluster (not in UniGene)	0.146
	302747	AF062275	EST cluster (not in UniGene) with exon hit	0.146
30	306317	AA947809	EST singleton (not in UniGene) with exon hit	0.146
	334399		CH22_FGENES.382_5	0.146
	326472		CH.19_hs gjl5867404	0.146
	333061		CH22_FGENES.75_4	0.146
	337072		CH22_FGENES.448-5	0.146
35	334328		CH22_FGENES.375_5	0.146
	327039		CH.21_hs gjl6531965	0.146
	325576		CH.12_hs gjl6552443	0.147
	315935	AI075804	Hs.132660 ESTs	0.147
	319638	AA323758	EST cluster (not in UniGene)	0.147
40	334501		CH22_FGENES.397_17	0.147
	338238		CH22_EM:AC005500.GENSCAN.264-4	0.147
	308636	AI744063	EST singleton (not in UniGene) with exon hit	0.147
	336567		CH22_FGENES.843_6	0.147
	335819		CH22_FGENES.819_2	0.147
45	336950		CH22_FGENES.361-8	0.147
	307055	AI148477	EST singleton (not in UniGene) with exon hit	0.147
	315134	AW504854	Hs.126714 ESTs	0.147
	335834		CH22_FGENES.621_1	0.147
	327870		CH.06_hs gjl5868131	0.147
50	323802	AA332011	Hs.250138 protein phosphatase 2C; magnesium-dependent; catalytic subunit	0.147
	329412		CH.X_hs gjl6682553	0.147
	323791	AA333068	EST cluster (not in UniGene)	0.147
	324126	AA385315	EST cluster (not in UniGene)	0.147
	327865		CH.06_hs gjl5868130	0.147
55	333445		CH22_FGENES.154_2	0.147
	321302	AA021351	Hs.158497 KIAA0724 gene product	0.147
	336744		CH22_FGENES.118-9	0.147
	323731	AA323414	EST cluster (not in UniGene)	0.148
	320289	H07989	EST cluster (not in UniGene)	0.148
60	305488	AA749000	EST singleton (not in UniGene) with exon hit	0.148
	305592	AA780594	Hs.62954 ferritin; heavy polypeptide 1	0.148
	304094	H11295	EST singleton (not in UniGene) with exon hit	0.148
	325040	AW296368	EST cluster (not in UniGene)	0.148
	339034		CH22_DA59H18.GENSCAN.26-2	0.148
65	334504		CH22_FGENES.398_2	0.148
	334778		CH22_FGENES.431_2	0.148
	320148	U77494	Hs.119687 RAN binding protein 8	0.148
	303584	AW173759	Hs.203401 ESTs	0.148
	325826		CH.15_hs gjl5867048	0.148
	331192	T55182	Hs.152571 ESTs; Highly similar to IGF-II mRNA-binding protein 2 [H.sapiens]	0.148



	325785		CH.14_hs gl 5381957	0.148
	333166		CH22_FGENES.91_8	0.148
	336548		CH22_FGENES.841_5	0.148
	337552		CH22_C4G1.GENSCAN.1-4	0.148
5	331775	AA382742	Hs.97151 EST	0.148
	338936		CH22_DJ32110.GENSCAN.19-6	0.148
	331889	AA428554	Hs.104894 ESTs; Weakly similar to fibronectin precursor [H.sapiens]	0.148
	332865		CH22_FGENES.28_5	0.148
10	328663		CH.07_hs gl 6004473	0.148
	328436		CH.07_hs gl 5888417	0.148
	311158	AI634864	Hs.250789 ESTs; Highly similar to similar to NEDD-4 [H.sapiens]	0.148
	336942		CH22_FGENES.354-2	0.148
	302262	R53169	Hs.246091 ESTs	0.149
15	333296		CH22_FGENES.132_3	0.149
	333365		CH22_FGENES.142_2	0.149
	311706	AW452392	Hs.252854 ESTs	0.149
	337109		CH22_FGENES.489-2	0.149
	315062	AW173300	Hs.190201 ESTs	0.149
20	333454		CH22_FGENES.157_3	0.149
	334784		CH22_FGENES.432_9	0.149
	333255		CH22_FGENES.118_3	0.149
	337518		CH22_FGENES.814-7	0.149
	320651	AA489268	EST cluster (not in UniGene)	0.149
25	323437	AA287567	EST cluster (not in UniGene)	0.149
	328761		CH.07_hs gl 5868302	0.149
	328787		CH.07_hs gl 5868309	0.149
	335261		CH22_FGENES.520_2	0.149
	300827	R16689	Hs.106004 ESTs	0.149
30	339263		CH22_BA354112.GENSCAN.10-1	0.149
	337412		CH22_FGENES.756-6	0.149
	334414		CH22_FGENES.384_1	0.149
	332931		CH22_FGENES.38_5	0.149
	310801	AW270980	Hs.106346 novel centrosomal protein RanBPM	0.149
35	305216	AA669056	EST singleton (not in UniGene) with exon hit	0.149
	314779	AA470122	Hs.190261 ESTs	0.149
	338414		CH22_EM:AC005500.GENSCAN.341-27	0.149
	303342	AW247361	EST cluster (not in UniGene) with exon hit	0.149
	337509		CH22_FGENES.806-4	0.149
40	306631	AI001149	EST singleton (not in UniGene) with exon hit	0.149
	302533	L36149	Hs.248116 chemokine (C motif) XC receptor 1	0.149
	336536		CH22_FGENES.839_18	0.149
	324666	T32458	Hs.14285 ESTs	0.149
	310173	AI767433	Hs.170013 ESTs	0.149
45	333595		CH22_FGENES.211_2	0.149
	335975		CH22_FGENES.652_9	0.15
	306654	AI003654	EST singleton (not in UniGene) with exon hit	0.15
	335025		CH22_FGENES.475_3	0.15
	328711		CH.07_hs gl 5868271	0.15
50	328274		CH.07_hs gl 5868219	0.15
	325505		CH.12_hs gl 6682451	0.15
	329641		CH.14_p2 gl 6488233	0.15
	304955	AA613504	EST singleton (not in UniGene) with exon hit	0.15
	339103		CH22_DA58H18.GENSCAN.44-10	0.15
	329636		CH.12_p2 gl 5302817	0.15
55	310118	AI203293	Hs.157489 ESTs	0.15
	326056		CH.17_hs gl 5867184	0.15
	303773	AA769074	EST cluster (not in UniGene) with exon hit	0.15
	303153	U09759	Hs.8325 mitogen-activated protein kinase 9	0.15

**TABLE 13A** shows the accession numbers for those primekeys lacking unigeneID's for Table 13. For each probeset we have listed the gene cluster number from which the oligonucleotides were designed. Gene clusters were compiled using sequences derived from Genbank ESTs and mRNAs. These sequences were clustered based on sequence similarity using Clustering and Alignment Tools (DoubleTwist, Oakland California). The Genbank accession numbers for sequences comprising each cluster are listed in the "Accession" column.

Pkey:	CAT number:	Accession:	Unique Eos probeset identifier number
Pkey	CAT number	Accession	Gene cluster number
322050	24275_1	AL137589 AA423949 BE222949 BE222694 A1199615 AW873116 A1277950 AW044290 AW630098	
321439	1599424_1	H61982 W01567 N75711	
321666	13653_22	BE259906 AA232518 AA013359 AL035788 AW160822 BE387134 BE002954 BE391839 AW161555 A1878841 BE616458	
		BE409981 BE387308 BE297436 BE315536 AA206924 R12012 AA214169 BE312812 BE387093 H11710 BE312009	
		BE260569 AA343588 AA219528 R34757 AA219749 BE336733 AA219751 AW411099 AA232408 BE018718 BE398089	
		AA206253 AA053487 AA114224 AV655868 AW732566 BE394087 AW732574 AA313442 BE336875 AA070548 BE259840	
		BE019828 AW732341 AA299916 BE018253 BE018238 BE387109 AA232304 BE255589 AW732585 AA181436 AA308777	
		AA075802 AW732521 AA314526 AA226747 BE409513 AA206168 BE388292 BE298782 BE387086 AA305310 AV652723	
		AA314918 BE615510 AW951763 BE398104 BE385195 BE407165 BE391338 BE390187 BE389189 BE540650 BE249884	
		BE385985 BE274245 BE391124 BE260080 AA182600 BE512821 BE390090 BE279398 BE279589 BE263454 BE515194	
		BE293569 BE272531 BE388814 BE384659 BE271685 BE561043 BE278449 BE302572 AW239076 A1750583 AA376179	
		AA112632 BE266324 BE266614 R13105 AA132286 BE296305 A1220355 AA205606 AA219527 AA219519 AW804310	
		AA083286 BE171208 T19693 AA338328 BE185868 AA903024 T92162 AA330119 BE410404 BE314868	
		AW576245 BE207878 AW299993 A1199559 A1285442 AW299994 AW394242 AW394184	
		A1357412 A1870708 A1590539 W07459	
		AW068287 AA310079 BE336702 AA356318 AA306059 AA346785 AW402633 AA311210 AW402909 N76879 AW402913	
		AW401920 AA321636 AA354474 C17297 C16938 AA311774 M29871 NM_002872 ZB2188 AW405674 H94176 R89281	
		AA214723 A1014482 AW949347 T27749 AW804226 AW796964 AW404581 AF077208 NM_014029 W68830 W79652	
		AA353375 AW575218 AA552192 AA521232 AA702695 AA033975 AW407827 AA826948 N94402 AW628604 A1523308	
		N57605 AA641662 H42477 N52784 A1753478 AA768493 AA845729 W47391 N55270 A1090117 R89282 BE206172	
		AA076650 AA595650 A1218931 BE049397 A1433110 W74114 H94277 A1358627 A1085221 A1862818 AA835957 AW103905	
		A1840644 AA835507 AA856887 AA694392 AW337542 A1524410 BE045500 A1440060 A1358801 AW028238 AW205248	
		A1718264 R48818 AA357358 A1695002 AA897549 AW081065 A1433360 A1810783 A1620963 ZB2188 AA360224	
		U29112 A1656540 A1364875 A1656248 A1890840	
		AA169345 A1762857 A1949997 A1809601 A1681948 A1221079 AW167404 A1347614 A1611090 A1023472 A1347683 A1027467	
		AW591788 A1380665 AA835735 AA836654 A1244028 AW183159 A1500112 A1818722 A1738693 A1702308 AA805365	
		A1766842	
		T59538 T59589 T59588 T59542 AF147374	
		AF070619 R20302 T80358	
		A1223366 BE305086 AW820106 AA621983 BE305208 A1738475 A1380189 AW590847 A1127232 AA622706 A1380858	
		AA621975 A1587036 AA665743 AW204003 A1692234 A1002242 A1692219 AW137282 AW268783 AW295910 A1308015	
		AW301462 A1318288 A1318575 A1318117 A1345591 A1249650 A1246934 A1246864 A1246971 AW268311 A1249654 BE041907	
		AW732776	
		N72324 N52825 W19526 BE143464 AA376060	
		M83667 NM_005195 S63168 M83667 AW068039 AW630649 A1338577 A1018125 A1269878 AW242440 A1887823 A1342581	
		BE222416 A1582847 A1651011 A1660815 A1699574 BE550201 A1926986 AW665855 A1827752 A1761857 BE328168	
		BE222451 A1762201 AW000929 AW007207 BE042862 BE551843 BE465373 A1279179 A1849945 BE551862 AW051667	
		BE328076 BE222296 AW007229 AW772332 A1279801 A1934526 A1631938 A1770103 BE041412 A1417900 A1692655	
		A1869943 AW270119 A1431739 A1703347 AW770568 AW025473 A1701497 A1128026 BE328147 AW203980 BE046793	
		AW087704 A1674597 A1650732 A1813691 A1472092 A1695224 A1241217 AW207746 A1206840 A1271362 A1631788 A1911883	
		A1914819 A1380585 A1767501 A1823759 A1564116 A1190991 A1377369 A1814122 A1221623 A1354793 A1081988 A1391740	
		A1337435 BE467366 A1824347 A1565325 A1280038 A1640455 A1819744 BE467803 BE327524 A1149402 A1313187 BE219684	
		AW611948 AW665821 A1091260 AW044492 BE220366 AW025381 AW183264 A1694865 A1498474 A1129780 A1202028	
		A1566792 BE220659 A1928040 A1830696 A1493021 AW612488 A1913152 BE042865 A1631837 A1693873 A1498925 A1768668	
		A1401544 BE327023 A1693383 A1769874 A1744003 AW082273 A1686501 A1798177 A1985196 A1090033 A1432342 A1689918	
		A1638308 BE468080 BE219588 A1912119 BE219767 AW005392 BE326564 A1589039 A1860187 A1758143 A1338168	
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			H68296 T59240 AA397650 H59852 AA938072 AA978010 R35643 T89735 AW361585 AW196153 AI538069 AA604540 AI434259 R49181 T58717 AW062488 AW796966 AI648384 R77733 AI623502 BE171342 BE171303 R35658 AW974883 AW149898 AI500045 AI540710 AI540392 AW009172 AW277199 AI371312 AI500098 AI470297 AW372940 AW844562 AW844560 AW797965 AI691146 X07062 AW799199 H60686 AA837684 AF130734 T25952 AI933771 AI914860 AW391925 AW783843 AW785012 AW386709 AW750987 AW750985 R35765 AW844942 AW750988 H64920 R34851 X86703 BE018103 BE018083 BE293253 AW247083 BE207643 BE514793 BE183238 AA376427 AW273850 AW043788 BE439973 AL045428 AI889050 AA026496 AI422924 AI884485 W96068 AA020872 F37119 AA714378 AA021107 AA011141 AI554001 AI375841 AI469097 AA335219 AW987315 AI692177 AA410448 AI568858 AA582647 AA026419 AA281639 AWS15248 AW007777 AA010840 AW188439 AI805423 AI148210 BE301590 AA744414 AA745392 AW167423 AA622659 AW000878 AI432387 AA760930 BE047189 AA021605 AV658045 AI093347 AA588594 H63143 AA639556 AI308976 AA379270 AA633407 AI874329 AI206484 AI493895 AI694103 AI249682 AA973765 AA872445 AI125446 AA287272 AW069761 AA682569 AW009712 BE542774 R50167 BE301574 AA991202 AA502006 AI219819 AW074373 AA617996 AI521242 F25241 AW615812 R16774 AA335218 AW673800 H26778 AI468557 AI886986 AI560758 AI480075 AA502968 AA503273 AA610680 AA287274 AA554020 AA284889 AA916638 AW489457 AW273250 AW673708 AW512948 AL041071 AI446042 AA903535 BE172441 AI282411 AW265021 AA810799 AI559865 AA729332 AW004611 AW129451 AA659019 BE208239 AA610825 H03511 BE383995 R16474 AA281701 AW009244 AA287424 AA558139 AW364081 F08147 AW408359 AW949429 R23785 AW247442 AA305512 T29095 AA905130 BE246361 BE244981 AA220199 BE504058 X80878 AA533727 AA608601 AW005964 AI811627 AI367037 AI277985 AI493719 AI277848 AA854982 AW247288 AI216345 AI041295 AI867378 AA781241 AI674270 AW628959 AI383083 BE504391 AA729421 AA552188 AA373387 AW880360 AW875262 AW875369 AW581540 AW875358 AW581568 R23735 AW134768 W03912 AW971410 AA506385 AA209530 H73495 H48629 W56149 H56752 AW340384 N49521 AA853680 AK001668 BE388425 BE563549 BE296124 BE288950 R51419 U46295 BE147282 AA360056 R48018 AW845348 N47383 AI817280 AI671902 AA988104 AA479464 N56996 AI192374 AI927558 AA659888 AI799903 AA548397 AI161167 AI656333 AI418829 AW592671 BE327906 AW513346 AI888579 AW469410 AW512809 D25682 AA576079 AA479354 T30342 R51307 T16044 H28063 AW079357 AI339477 R47914 AI986068 AI870065 AI868489 AI521099 AI582732 AA995540 AW957299 AA352608 AA676752 AA410510 AA358874 AI865724 AA853679 AI699265 AW188789 N47380 AA233715 BE258194 R55421 R55643 H42362 AA243884 AW886407 AA489268 R57015 R58094 BE077423 BE546995 AW849216 T69383 AW938111 H60337 BE221073 AB033100 AA347036 BE260325 AW981669 AL047207 AA347037 AI766894 AA601045 AI559897 AW139033 AW274622 AW172684 AW089070 AA804340 AW798925 AA825266 AL137354 AL043375 AA971985 AA977992 AA989542 AA989598 AA989713 AA991487 AI000246 AI000248 AI001149 AI003654 AI041589 AI051698 AI452732 AI470948 AI475914 AI055966 AI068577 AI086929 AI095365 AI127883 AI559492 AI565612 AI571211 AI581855 AI591235 AI687580 AI719930 AI735634 AI744063 AI819263 AI829820 AI873242 AI318327 AI318328 AI318495 AA627416 AA635771 AA639783
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	320651	58648_1	
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	305704	464759_1	
	322011	23158_1	
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	310570	1071946_1	
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	303977	AW512978
5	305216	AA669056
	305263	AA679457
	305266	AA679772
	305396	AA721052
	305403	AA723748
	305488	AA749000
10	305549	AA773530
	305601	AA780975
	305610	AA782319
	305621	AA789095
	305710	AA826544
15	305724	AA827608
	305744	AA831819
	305752	AA835278
	307018	AI140639
	307055	AI148477
20	307058	AI148709
	305801	AA845897
	305830	AA857665
	305836	AA858043
	305852	AA862455
25	305858	AA863103
	305866	AA864533
	305867	AA864572
	307126	AI184951
	305903	AA873085
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	328809 c_7_hs	
	305949 AA884409	
	328829 c_7_hs	
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	330024 c16_p2	
	330028 c16_p2	
	330049 c17_p2	
	305993 AA889197	
	330095 c19_p2	
40	330096 c19_p2	
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	307427	AI243437
	307491	AI268539
	307581	AI284415
45	307588	AI285535
	337672 CH22_6002FG_LINK_EM:AC00	
	337693 CH22_6030FG_LINK_EM:AC00	
	337738 CH22_6083FG_LINK_EM:AC00	
	307692	AI318342
50	307806	AI351739
	309107	AI925823
	309230	AI970747
	339338 CH22_8300FG_LINK_BA35411	
	309257	AI984183
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	309422	AW087175
	325207 c10_hs	
	325257 c11_hs	
	309646	AW194694
60	309651	AW195850
	325313 c11_hs	
	309924	AW340812
	334030 CH22_1308FG_320_2_LINK_EM	
	334040 CH22_1318FG_322_8_LINK_EM	
65	334083 CH22_1361FG_327_38_LINK_E	
	332810 CH22_26FG_7_12_LINK_C65E1	
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	302753 33029_1	M74299 M74302 M74303
	302777 33803_1	AJ230640 AJ230648

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	302996 41196_1	AF054663 AF124197 R70292
	325870 c16_hs	
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	304410	AA284508
	304443	AA399444
	304475	AA428879
	304522	AA465405
10	304678	AA548556
	304705	AA564064
	306004	AA869982
	306008	AA894390
	306013	AA896990
15	306082	AA908508
	336174 CH22_3567FG_710_1_LINK_DA	
	306094	AA908877
	304823	AA584837
	304872	AA595289
20	304918	AA602697
	304955	AA613504
	306249	AA933840
	306286	AA936892
	306295	AA937331
25	306317	AA947809
	306347	AA961144
	306365	AA962086
	306398	AA970548
	330401 entrez_D28383	D28383
30	330463 460_2	NM_001055 AA332948 U26309 U09031 L19955 L10819 AI366043 X84654 U71086 AV654451 AJ007418 AA053625 BE168856 AA376730 H12694 AA810348 AA621972 AI818950 AV645367 AI818966 AA910602 AW512449 H67893 AI310497 AI304330 AI339217 AW193588 AW438688 AI818970 AW316799 AA906527 AA777570 N47673 AI336428 AW945133 AI038606 R29692 AW194197 AI304748 H12639 AA053178 AA493213 AA876958 AA113154 AI313469 AI368239 R93183 W24532 U52852 U54701 AL046864 AA365785
		U11872
35	330535 1374_-8	U24488 NM_007116
	332634 10404_2	



**TABLE 13B** shows the genomic positioning for those primekeys lacking unigene ID's and accession numbers in Table 13. For each predicted exon, we have listed the genomic sequence source used for prediction. Nucleotide locations of each predicted exon are also listed.

10 Pkey: Unique number corresponding to an Eos probeset  
 Ref: Sequence source. The 7 digit numbers in this column are Genbank Identifier (GI) numbers  
 Strand: Indicates DNA strand from which exons were predicted.  
 Nt\_position: Indicates nucleotide positions of predicted exons.

15	Pkey	Ref	Strand	Nt_position
	332791	Dunham, I. et.al.	Plus	72720-73315
	332792	Dunham, I. et.al.	Plus	73381-73768
	332810	Dunham, I. et.al.	Plus	304295-304384
	332944	Dunham, I. et.al.	Plus	2414825-2414932
20	332972	Dunham, I. et.al.	Plus	2572152-2572236
	333133	Dunham, I. et.al.	Plus	3360058-3360195
	333154	Dunham, I. et.al.	Plus	3615887-3616019
	333155	Dunham, I. et.al.	Plus	3616832-3617003
	333227	Dunham, I. et.al.	Plus	3992866-3992968
25	333230	Dunham, I. et.al.	Plus	3995507-3996507
	333298	Dunham, I. et.al.	Plus	4581537-4581947
	333304	Dunham, I. et.al.	Plus	4629943-4630242
	333305	Dunham, I. et.al.	Plus	4630388-4630645
	333365	Dunham, I. et.al.	Plus	4786883-4787283
30	333383	Dunham, I. et.al.	Plus	4907179-4907277
	333391	Dunham, I. et.al.	Plus	4918697-4918780
	333392	Dunham, I. et.al.	Plus	4918294-4918433
	333397	Dunham, I. et.al.	Plus	4922466-4922635
35	333403	Dunham, I. et.al.	Plus	4925140-4925256
	333413	Dunham, I. et.al.	Plus	4943824-4943974
	333445	Dunham, I. et.al.	Plus	5097827-5097885
	333479	Dunham, I. et.al.	Plus	5272855-5272939
	333481	Dunham, I. et.al.	Plus	5286358-5286505
	333483	Dunham, I. et.al.	Plus	5297945-5298105
40	333516	Dunham, I. et.al.	Plus	5570204-5570390
	333517	Dunham, I. et.al.	Plus	5570729-5570925
	333518	Dunham, I. et.al.	Plus	5571761-5572025
	333531	Dunham, I. et.al.	Plus	5622822-5622884
	333566	Dunham, I. et.al.	Plus	5954226-5954473
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	333586	Dunham, I. et.al.	Plus	6246834-6247314
	333588	Dunham, I. et.al.	Plus	6255445-6255779
	333594	Dunham, I. et.al.	Plus	6308990-6309450
	333595	Dunham, I. et.al.	Plus	6323103-6323348
50	333600	Dunham, I. et.al.	Plus	6355629-6355925
	333601	Dunham, I. et.al.	Plus	6360075-6360442
	333607	Dunham, I. et.al.	Plus	6504431-6504690
	333612	Dunham, I. et.al.	Plus	6549563-6549697
	333613	Dunham, I. et.al.	Plus	6550643-6550748
55	333614	Dunham, I. et.al.	Plus	6551227-6551389
	333624	Dunham, I. et.al.	Plus	6595146-6595244
	333626	Dunham, I. et.al.	Plus	6614174-6614467
	333635	Dunham, I. et.al.	Plus	6663683-6663973
	333637	Dunham, I. et.al.	Plus	6674968-6675134
60	333642	Dunham, I. et.al.	Plus	6708760-6709139
	333647	Dunham, I. et.al.	Plus	6772502-6772779
	333653	Dunham, I. et.al.	Plus	6811130-6811392
	333654	Dunham, I. et.al.	Plus	6816731-6816893
	333656	Dunham, I. et.al.	Plus	6822087-6822406
65	333657	Dunham, I. et.al.	Plus	6831369-6831445
	333658	Dunham, I. et.al.	Plus	6835282-6835474

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	333684	Dunham, I. et al.	Plus	7169561-7169742
	333686	Dunham, I. et al.	Plus	7177117-7177302
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	333747	Dunham, I. et al.	Plus	7605884-7606206
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	333775	Dunham, I. et al.	Plus	7729983-7730149
	333806	Dunham, I. et al.	Plus	7877475-7877666
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	333994	Dunham, I. et al.	Plus	8852749-8852894
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	334111	Dunham, I. et al.	Plus	10279365-10279531
	334135	Dunham, I. et al.	Plus	10457085-10457183
	334218	Dunham, I. et al.	Plus	12680289-12680378
	334249	Dunham, I. et al.	Plus	13180430-13180574
30	334262	Dunham, I. et al.	Plus	13231452-13231581
	334264	Dunham, I. et al.	Plus	13234447-13234544
	334327	Dunham, I. et al.	Plus	13577413-13577496
	334328	Dunham, I. et al.	Plus	13588868-13589936
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	334659	Dunham, I. et al.	Plus	15460624-15460726
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	334885	Dunham, I. et al.	Plus	19233667-19233787
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	335990	Dunham, I. et al.	Plus	27988532-27988608
	336010	Dunham, I. et al.	Plus	28570239-28570330
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	336126	Dunham, I. et al.	Plus	30057891-30058105
	336129	Dunham, I. et al.	Plus	30082259-30082348
	336187	Dunham, I. et al.	Plus	30433494-30433585
	336188	Dunham, I. et al.	Plus	30434870-30435004
	336225	Dunham, I. et al.	Plus	30833614-30833788
55	336371	Dunham, I. et al.	Plus	33968108-33968204
	336373	Dunham, I. et al.	Plus	33976308-33976504
	336377	Dunham, I. et al.	Plus	33994489-33994599
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	336499	Dunham, I. et al.	Plus	34267504-34267572
	336503	Dunham, I. et al.	Plus	34271306-34271372
	336548	Dunham, I. et al.	Plus	34353881-34354826

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	336645	Dunham, I. et al.	Minus	1351268-1351168
	336682	Dunham, I. et al.	Minus	2158060-2157993
40	336684	Dunham, I. et al.	Minus	1993558-1993481
	336678	Dunham, I. et al.	Minus	2022565-2022497
	336684	Dunham, I. et al.	Minus	2158060-2157993
	336686	Dunham, I. et al.	Minus	2160698-2160486
	336714	Dunham, I. et al.	Minus	3094026-3093871
45	336719	Dunham, I. et al.	Minus	3331631-3331503
	336736	Dunham, I. et al.	Minus	4093128-4093041
	336744	Dunham, I. et al.	Minus	4333001-4332848
	336786	Dunham, I. et al.	Minus	5419973-5418873
	336793	Dunham, I. et al.	Minus	5631345-5631237
50	336859	Dunham, I. et al.	Minus	8201756-8201561
	336863	Dunham, I. et al.	Minus	8396673-8396425
	336933	Dunham, I. et al.	Minus	11760045-11759981
	336942	Dunham, I. et al.	Minus	12027537-12027455
	336960	Dunham, I. et al.	Minus	13267243-13267172
55	336969	Dunham, I. et al.	Minus	13725722-13725643
	336971	Dunham, I. et al.	Minus	13732308-13732221
	337003	Dunham, I. et al.	Minus	15523541-15523422
	337011	Dunham, I. et al.	Minus	16106423-16106090
	337070	Dunham, I. et al.	Minus	19034423-19034321
60	337072	Dunham, I. et al.	Minus	19077452-19077323
	337086	Dunham, I. et al.	Minus	19657011-19656881
	337140	Dunham, I. et al.	Minus	22849450-22849388
	337183	Dunham, I. et al.	Minus	24594969-24594874
	337256	Dunham, I. et al.	Minus	27659956-27659876
65	337278	Dunham, I. et al.	Minus	28429017-28428848
	337284	Dunham, I. et al.	Minus	28491414-28491094
	337293	Dunham, I. et al.	Minus	28846334-28845873
	337316	Dunham, I. et al.	Minus	29657129-29656997
	337326	Dunham, I. et al.	Minus	30017189-30017069



	337382	Dunham, I. et.al.	Minus	31233666-31233579
	337392	Dunham, I. et.al.	Minus	31442311-31442229
	337406	Dunham, I. et.al.	Minus	31864840-31864588
5	337412	Dunham, I. et.al.	Minus	31916487-31916312
	337419	Dunham, I. et.al.	Minus	32021496-32021170
	337436	Dunham, I. et.al.	Minus	32257869-32257739
	337455	Dunham, I. et.al.	Minus	32434517-32434425
	337509	Dunham, I. et.al.	Minus	33414613-33414498
10	337518	Dunham, I. et.al.	Minus	33795750-33796647
	337529	Dunham, I. et.al.	Minus	34043668-34043546
	337533	Dunham, I. et.al.	Minus	34193388-34193261
	337539	Dunham, I. et.al.	Minus	34254490-34254322
	337551	Dunham, I. et.al.	Minus	34524446-34524362
	337553	Dunham, I. et.al.	Minus	24230-24160
15	337591	Dunham, I. et.al.	Minus	1008414-1006184
	337592	Dunham, I. et.al.	Minus	1007791-1007634
	337593	Dunham, I. et.al.	Minus	1009460-1009291
	337607	Dunham, I. et.al.	Minus	1355719-1355637
	337612	Dunham, I. et.al.	Minus	1570235-1570142
20	337635	Dunham, I. et.al.	Minus	2168690-2168569
	337824	Dunham, I. et.al.	Minus	4559540-4559266
	337825	Dunham, I. et.al.	Minus	4567155-4567005
	337850	Dunham, I. et.al.	Minus	5077143-5076943
	337854	Dunham, I. et.al.	Minus	5153435-5153272
25	337913	Dunham, I. et.al.	Minus	6149843-6149786
	337915	Dunham, I. et.al.	Minus	5922748-5922690
	337968	Dunham, I. et.al.	Minus	7095797-7095680
	338010	Dunham, I. et.al.	Minus	7754282-7754184
	338012	Dunham, I. et.al.	Minus	7761421-7761351
30	338017	Dunham, I. et.al.	Minus	7864521-7864401
	338065	Dunham, I. et.al.	Minus	7235048-7234950
	338094	Dunham, I. et.al.	Minus	9595602-9595440
	338129	Dunham, I. et.al.	Minus	10915338-10915237
	338132	Dunham, I. et.al.	Minus	10989617-10989530
35	338150	Dunham, I. et.al.	Minus	11478551-11478355
	338157	Dunham, I. et.al.	Minus	11731444-11731375
	338195	Dunham, I. et.al.	Minus	13484103-13483972
	338255	Dunham, I. et.al.	Minus	15242294-15242231
	338276	Dunham, I. et.al.	Minus	16109555-16109398
40	338431	Dunham, I. et.al.	Minus	19747608-19747496
	338448	Dunham, I. et.al.	Minus	20151152-20151054
	338451	Dunham, I. et.al.	Minus	20174286-20174193
	338477	Dunham, I. et.al.	Minus	20821897-20821838
	338534	Dunham, I. et.al.	Minus	21771238-21771170
45	338682	Dunham, I. et.al.	Minus	24800712-24800461
	338684	Dunham, I. et.al.	Minus	24827522-24827428
	338689	Dunham, I. et.al.	Minus	24893073-24892972
	338695	Dunham, I. et.al.	Minus	25104153-25104016
	338825	Dunham, I. et.al.	Minus	27664798-27664712
50	338842	Dunham, I. et.al.	Minus	27824238-27824079
	338893	Dunham, I. et.al.	Minus	28491807-28491631
	338904	Dunham, I. et.al.	Minus	28766345-28766253
	338935	Dunham, I. et.al.	Minus	29071537-29071461
	339022	Dunham, I. et.al.	Minus	30523414-30523289
55	339034	Dunham, I. et.al.	Minus	30621603-30621422
	339190	Dunham, I. et.al.	Minus	32403103-32402985
	339212	Dunham, I. et.al.	Minus	32494335-32494210
	339213	Dunham, I. et.al.	Minus	32496590-32496440
	339216	Dunham, I. et.al.	Minus	32504250-32504109
60	339233	Dunham, I. et.al.	Minus	32751331-32751238
	339258	Dunham, I. et.al.	Minus	32834756-32834615
	339262	Dunham, I. et.al.	Minus	32971258-32971090
	339263	Dunham, I. et.al.	Minus	32974634-32974452
	339265	Dunham, I. et.al.	Minus	32975943-32975806
65	339338	Dunham, I. et.al.	Minus	33468728-33468606
	339396	Dunham, I. et.al.	Minus	34017306-34017205
	339400	Dunham, I. et.al.	Minus	34045024-34044940
	339425	Dunham, I. et.al.	Minus	34407911-34407798
	325207	6552430	Plus	140049-140170

	329568	3962490	Plus	36331-36750
	329517	3983513	Minus	53197-53269
	325313	5866865	Minus	27385-28182
5	325327	5866875	Plus	75189-75264
	325317	5866878	Minus	156551-156649
	325257	5866895	Plus	10867-10955
	329632	6729060	Plus	192813-193017
	325371	5866920	Minus	1035422-1035536
10	325375	5866920	Minus	1165503-1165810
	325378	5866920	Minus	1187981-1188167
	325469	6017034	Plus	286823-286991
	325470	6017034	Plus	287578-287663
	325576	6552443	Minus	137769-137894
	325505	6682451	Minus	240852-240946
15	325543	6682452	Plus	151873-152057
	329635	5302817	Minus	62522-62622
	329636	5302817	Minus	64969-65078
	325593	5866992	Minus	469726-469860
20	325675	5867014	Plus	955517-955711
	325704	5867028	Plus	156198-156387
	325682	6136923	Plus	370618-370763
	325785	6381957	Plus	61849-62003
	325666	6469822	Plus	16769-16857
25	325818	6682490	Minus	120278-120559
	329777	6002090	Minus	191389-191479
	329768	6015501	Plus	118315-118422
	329759	6048280	Minus	37647-37730
	329731	6065783	Plus	158772-158900
30	329687	6117858	Minus	22165-22288
	329676	6272128	Minus	142207-142359
	329667	6272129	Plus	101355-101745
	329669	6272129	Plus	131223-131291
	329670	6272129	Plus	131351-131495
35	329641	6468233	Minus	105995-106107
	329791	6469354	Minus	131982-132089
	325826	5867048	Minus	46361-46458
	325829	5867052	Plus	232674-233060
	329888	6067149	Minus	37227-37473
40	329893	6525313	Minus	166123-166791
	329899	6563505	Minus	111058-111783
	325988	5867064	Plus	17349-17606
	325855	5867067	Plus	276141-276251
	325999	5867073	Plus	149115-149192
	326001	5867073	Plus	155223-155348
45	325886	5867087	Plus	194694-194915
	325882	5867087	Minus	8178-8347
	325905	5867104	Plus	78779-78876
	325922	5867122	Minus	329063-329134
50	325937	5867132	Minus	152633-152802
	325960	5867147	Minus	162506-162635
	325961	5867147	Minus	165106-165209
	325838	6552452	Plus	171451-171532
	325839	6552452	Plus	181984-182037
55	325840	6552452	Plus	184380-184547
	325844	6552453	Minus	14188-14332
	325870	6682492	Plus	228209-228297
	329984	4646103	Minus	139780-139890
	329976	4878063	Minus	62584-62691
	329935	6165200	Minus	69059-69127
60	329916	6223624	Plus	36396-37195
	330021	6671889	Plus	120938-121032
	330024	6671908	Minus	1005-1270
	330028	6671908	Minus	30015-30144
	326033	5867178	Plus	37261-37333
65	326036	5867178	Minus	120215-120273
	326056	5867184	Minus	181553-181690
	326116	5867193	Plus	45548-45604
	326122	5867194	Plus	144397-144683
	326138	5867203	Minus	179374-179436

	326145	5867204	Minus	52599-52814
	326180	5867211	Minus	182758-183222
	326201	5867216	Minus	166168-166959
5	326207	5867222	Plus	48139-48219
	326226	5867230	Plus	52644-52705
	326233	5867232	Plus	124788-124883
	326238	5867260	Plus	64282-64338
	326241	5867260	Minus	181648-181916
	326243	5867261	Plus	123838-123978
10	326251	5867263	Minus	82716-82822
	326268	5867287	Plus	122114-122765
	326124	5916395	Plus	407102-407560
	326339	6056311	Minus	164637-165251
15	330049	4567182	Minus	314662-315210
	326358	5867293	Plus	9122-9195
	326365	5867297	Minus	98630-96764
	326379	5867327	Plus	32289-32402
	326382	5867327	Minus	50420-50503
	326390	5867340	Minus	108814-110592
20	326424	5867389	Minus	168329-168409
	326453	5867399	Plus	86222-86423
	326472	5867404	Plus	293739-293940
	326492	5867422	Plus	120768-120991
	326533	5867441	Minus	532153-532280
25	330117	6015201	Minus	7340-7680
	330115	6015202	Plus	11403-11677
	330116	6015202	Plus	12109-12418
	330095	6015278	Plus	15343-15814
	330096	6015278	Plus	49370-49458
30	326644	5867559	Plus	42684-42819
	326713	5867595	Plus	121511-121798
	326745	5867611	Plus	127130-127318
	326752	5867615	Minus	1214-1562
	326753	5867616	Plus	12454-12511
35	326598	5867634	Plus	68955-69014
	326667	6552455	Plus	142311-142441
	326855	6552460	Minus	111390-111463
	326812	6682504	Plus	189811-189941
	327005	5867664	Plus	610847-610907
40	327008	5867664	Plus	928737-928811
	326896	5867680	Minus	12032-12122
	326904	5867684	Minus	9280-9606
	326951	6004446	Plus	193812-193998
	326941	6004446	Plus	62018-62896
45	326943	6004446	Minus	89242-89427
	326928	6456782	Minus	291007-291219
	326958	6469836	Minus	42952-43082
	326959	6469836	Minus	43159-43301
	327039	6531965	Plus	694486-694998
50	327127	6582520	Plus	41925-42083
	330158	6580367	Plus	81966-82456
	327204	5867447	Plus	165135-165239
	327208	5867447	Plus	180805-180864
	327266	5867462	Minus	82400-82615
55	327277	5867473	Minus	165616-165715
	327289	5867481	Plus	49296-49536
	327296	5867492	Plus	7627-8166
	327237	5867544	Minus	59702-59813
	327145	5867548	Minus	40482-40551
60	327333	5902477	Minus	141448-141609
	327335	5902477	Minus	142979-143124
	327343	6017017	Minus	12288-12395
	327350	6249563	Minus	41890-41985
	327358	6552411	Minus	3802-3950
65	327360	6552411	Minus	6255-6422
	327409	5867750	Minus	52949-53011
	327424	5867751	Plus	160442-160598
	327430	5867754	Plus	1320-1403
	327470	5867772	Plus	150910-150973

	327460	6004455	Plus	175245-175343
	327498	6017023	Minus	42178-42283
	327509	6117815	Minus	54882-55053
	327510	6117815	Minus	56824-56944
5	327512	6117815	Plus	176256-176325
	327535	6525279	Plus	19105-19176
	330163	6042042	Minus	20321-20385
	330171	6848220	Plus	110889-111575
	327579	5867824	Minus	37229-38335
10	327672	5867843	Minus	69649-69740
	327629	5867872	Plus	49692-49811
	327640	5867890	Plus	9448-9568
	327649	5867899	Plus	205871-205927
	327612	6525283	Plus	2747-2824
15	327718	6525284	Plus	86123-86186
	327801	5867824	Plus	23239-23348
	327762	5867961	Minus	50303-50439
	327763	5867961	Plus	229347-229478
	327776	5867964	Minus	164308-164486
20	327822	5867968	Minus	168886-168933
	327823	5867968	Minus	170359-170433
	327807	5867968	Plus	33745-33811
	327845	6531962	Plus	193402-193549
	330228	6013527	Minus	3719-3787
25	330190	6165182	Plus	36103-38243
	328122	5868031	Plus	158474-158658
	328132	5868038	Minus	126737-126839
	328159	5868065	Minus	52957-53162
	328168	5868071	Plus	60321-60479
30	328175	5868073	Plus	208-271
	328217	5868096	Minus	3742-4362
	327865	5868130	Plus	61503-62205
	327866	5868131	Minus	2893-3046
	327870	5868131	Plus	53558-53757
35	327879	5868142	Minus	77722-77793
	327902	5868158	Minus	133339-133467
	327918	5868165	Plus	547530-547591
	327934	5868184	Plus	41830-42036
40	327959	5868210	Minus	48497-48682
	327976	5868212	Minus	349301-349409
	328020	5902482	Minus	556386-556652
	328042	5902482	Minus	1985085-1986626
	328008	5902482	Plus	296663-297151
	330301	2905862	Minus	4420-5781
45	330299	2905881	Minus	1020-1382
	328274	5868219	Minus	31244-31439
	328595	5868224	Plus	148738-148967
	328591	5868227	Minus	237647-237726
	328668	5868254	Minus	10888-10984
50	328677	5868256	Minus	58708-58950
	328687	5868262	Plus	624479-624585
	328708	5868270	Plus	165501-165614
	328711	5868271	Minus	97797-97890
	328730	5868289	Plus	8068-8214
55	328732	5868289	Plus	37437-37550
	328734	5868289	Plus	50559-50747
	328752	5868298	Minus	114911-115087
	328755	5868301	Minus	145959-146446
	328761	5868302	Minus	239308-239412
60	328775	5868309	Plus	12845-12920
	328784	5868309	Minus	74523-74604
	328787	5868309	Plus	135772-135963
	328809	5868327	Plus	91782-91849
	328829	5868337	Plus	36309-36630
65	328280	5868352	Plus	160563-160631
	328311	5868371	Minus	170560-170826
	328318	5868373	Plus	414945-415620
	328323	5868373	Minus	1080089-1080235
	328348	5868383	Minus	260272-260379

	328377	5868390	Plus	16947-17023
	328436	5868417	Plus	203760-203904
	328504	5868471	Plus	47064-47217
5	328506	5868471	Plus	60716-60830
	328522	5868477	Plus	1972307-1972452
	328525	5868482	Plus	12387-14313
	328541	5868486	Plus	130956-131050
	328662	6004473	Plus	1184773-1184855
	328663	6004473	Plus	1185279-1186834
10	328803	6004475	Minus	291716-291948
	328304	6004478	Minus	3884-3952
	328927	5868500	Minus	428829-428893
	328936	5868500	Minus	1352202-1352259
	328939	6004481	Minus	131139-131320
15	328941	6456765	Minus	9817-9885
	328948	6456765	Plus	28227-28413
	328968	6456775	Plus	117442-118283
	330316	6007576	Minus	119761-119831
	330350	3056622	Minus	26413-26820
20	330351	3056622	Minus	27522-27614
	330348	4544475	Minus	19855-19962
	329034	5868561	Minus	32819-32939
	329046	5868569	Plus	18971-19030
	329053	5868574	Plus	426453-426541
25	329186	5868711	Minus	13108-13225
	329237	5868729	Plus	133238-133339
	329276	5868762	Minus	222629-222709
	329333	5868806	Plus	392666-392748
	329376	5868859	Plus	52356-52694
30	329384	5868869	Minus	116524-116662
	329140	6017060	Plus	290842-290905
	329317	6381976	Plus	614823-615209
	329319	6381976	Plus	721390-721470
	329129	6588026	Plus	144569-144712
35	329373	6682537	Minus	36950-36901
	329412	6682553	Minus	68948-69041
	329424	5868879	Plus	362196-362344
	329446	5868886	Plus	84776-84899
	329449	5868886	Plus	97697-97771

**TABLE 14:** shows genes, including expression sequence tags, down-regulated in prostate tumor tissue compared to normal prostate tissue as analyzed using Affymetrix/Eos Hu02 GeneChip array. Shown are the ratios of "average" normal prostate to "average" prostate cancer tissues.

10	Pkey:	Unique Eos probe set identifier number			
	ExAccn:	Exemplar Accession number, Genbank accession number			
	UnigeneID:	Unigene number			
	Unigene Title:	Unigene gene title			
	R1:	Background subtracted normal prostate : prostate tumor tissue			
	Pkey	ExAccn	UnigeneID	Unigene Title	R1
15	331328	AA281133	Hs.88808	ESTs	18.53
	320875	D60641	Hs.131821	ESTs	14.55
	300994	AI251936	Hs.146298	ESTs	12.17
	323481	AA418762	Hs.190044	ESTs	10.55
20	301015	AA947682	Hs.217173	ESTs; Weakly similar to Chain A; Cdc42hs-Gdp Complex [H.sapiens]	10.17
	319419	AA543098	Hs.13848	ESTs; Highly similar to mitogen-induced [M.musculus]	9.2
	323486	C05278	Hs.186800	ESTs; Moderately similar to [PYRUVATE DEHYDROGENASE (LIPOAMIDE)] KINASE ISOZYME 4 PRECURSOR [H.sapiens]	8.87
	324882	AW419080	Hs.250645	ESTs	8
25	330569	U57796	Hs.57679	zinc finger protein 192	7.88
	330126		CH21_p2	gl[6093735]	7.8
	316265	AA737400	Hs.142230	ESTs	7.7
	323045	AA148950	Hs.188836	ESTs	7.84
	320668	R58399	Hs.146217	ESTs	7.4
30	330769	AA465192	Hs.16514	ESTs	7.15
	312614	AI766732	Hs.201194	ESTs	7
	314790	AW341754	Hs.189305	ESTs	6.83
	309979	AW452118	Hs.257533	EST	6.74
	314236	AA743396	Hs.189023	ESTs	6.49
35	329192		CHX_hs	gl[5868716]	6.1
	324307	AA627642	Hs.4994	transducer of ERBB2; 2 (TOB2)	5.99
	303685	AW500106		EST cluster (not in UniGene) with exon hit	5.82
	314921	AW452382	Hs.257564	ESTs	5.8
	315840	AA679001	Hs.192221	ESTs	5.68
40	332776	AA034364	Hs.256551	ESTs; Weakly similar to [ALU CLASS B WARNING ENTRY] [H.sapiens]	5.43
	313533	AW298141	Hs.157975	ESTs	5.4
	303494	F30712		EST cluster (not in UniGene) with exon hit	5.35
	317490	AI627358	Hs.148367	ESTs	5.31
	332546	D84454	Hs.21899	solute carrier family 35 (UDP-galactose transporter); member 2	5.25
45	334719		CH22_FGENES.421_30		5.25
	300679	AA813958	Hs.207727	ESTs; Moderately similar to KIAA0071 [H.sapiens]	5.22
	311811	AI625304	Hs.190312	ESTs	5.22
	315310	AW511298	Hs.258067	ESTs	5.19
	312871	H86747	Hs.227602	KIAA1116 protein	5.11
50	324715	AI739168		EST cluster (not in UniGene)	4.97
	313870	AW206435	Hs.146057	ESTs	4.97
	321453	N50080	Hs.117827	ESTs	4.78
	316160	AW197887	Hs.253353	ESTs	4.63
	313833	AA766825		EST cluster (not in UniGene)	4.58
55	315850	AW270550	Hs.116957	ESTs	4.53
	303124	AF161350		EST cluster (not in UniGene) with exon hit	4.46
	323346	AL134932	Hs.143607	ESTs	4.4
	301383	AA913591	Hs.126480	ESTs	4.35
	324513	AW501678	Hs.164577	ESTs	4.28
60	303480	AA331906		EST cluster (not in UniGene) with exon hit	4.25
	323591	AA301270		EST cluster (not in UniGene)	4.22
	313603	AW468119		EST cluster (not in UniGene)	4.2
	317863	AI733395	Hs.129124	ESTs	4.1
	312381	R42049	Hs.195473	ESTs	4.08
65	317514	AW451570	Hs.126850	ESTs	4.03
	319760	AA621606	Hs.117856	ESTs	4.03

	322520	T55958	EST cluster (not in UniGene)	4
	314754	AW026781	Hs.134374 ESTs	4
	316088	AI990652	Hs.208973 ESTs	4
	318473	AI939339	Hs.146883 ESTs	3.96
5	307848	AI364186	EST singleton (not in UniGene) with exon hit	3.95
	300730	AW449204	Hs.257125 ESTs	3.94
	303034	W60843	Hs.31570 ESTs	3.93
	324668	AI679131	Hs.201424 ESTs	3.9
	324674	AA541323	Hs.115831 ESTs	3.88
10	300547	N53442	Hs.143443 ESTs	3.83
	316100	AW203986	Hs.213003 ESTs	3.79
	314801	AA481027	Hs.127336 ESTs; Weakly similar to ORF YGR245c [S.cerevisiae]	3.75
	320856	D59945	EST cluster (not in UniGene)	3.74
	313188	AI039702	Hs.179573 collagen; type I; alpha 2	3.73
15	314187	AA804409	Hs.118920 ESTs	3.73
	311826	AA765470	Hs.122826 ESTs	3.7
	302358	D81150	EST cluster (not in UniGene) with exon hit	3.68
	311441	Z38720	Hs.151014 ESTs	3.66
	321914	AA011603	EST cluster (not in UniGene)	3.59
20	332216	H95082	Hs.102332 EST	3.52
	324771	AA631739	EST cluster (not in UniGene)	3.5
	323691	AA317561	EST cluster (not in UniGene)	3.49
	303525	AW516519	Hs.115130 ESTs	3.47
	309709	AW242630	EST singleton (not in UniGene) with exon hit	3.46
25	500038		AFFX control: MurlL4	3.38
	316526	AI088192	Hs.135474 ESTs; Weakly similar to ATP-DEPENDENT RNA HELICASE A [H.sapiens]	3.36
	313029	AA731520	Hs.170504 ESTs	3.35
	304356	AA196027	Hs.195188 glyceraldehyde-3-phosphate dehydrogenase	3.34
	314610	AI948688	Hs.191805 ESTs	3.33
30	329815		CH.14_p2 gjl6624888	3.32
	314949	AI745387	Hs.239124 ESTs	3.31
	300598	N53574	Hs.158932 ESTs	3.3
	329218		CHX_hs gjl5869726	3.28
	315706	AW440742	Hs.155556 ESTs	3.28
35	303751	AW503637	EST cluster (not in UniGene) with exon hit	3.25
	307783	AI347274	EST singleton (not in UniGene) with exon hit	3.25
	321414	AA324975	Hs.128993 ESTs; Weakly similar to KIAA0465 protein [H.sapiens]	3.25
	312187	AA700439	Hs.188490 ESTs	3.25
	334061		CH22_FGENES.327_14	3.23
40	338038		CH22_FGENES.678_7	3.23
	321477	H67818	Hs.222059 ESTs	3.21
	315760	AW139383	Hs.245437 ESTs	3.2
	316733	AA811713	Hs.163222 ESTs	3.2
	300855	AW235248	Hs.79828 ESTs	3.2
45	323611	AA304986	Hs.145704 ESTs	3.19
	314138	AA740616	EST cluster (not in UniGene)	3.17
	316774	AA814859	EST cluster (not in UniGene)	3.16
	308884	AI833131	Hs.179100 ESTs	3.11
	331317	AA258222	Hs.87757 ESTs	3.1
50	317221	AI989538	Hs.191074 ESTs	3.08
	316386	AA749062	Hs.180285 ESTs	3.08
	321040	H26953	EST cluster (not in UniGene)	3.08
	308828	AI824829	EST singleton (not in UniGene) with exon hit	3.08
	300778	AA236233	Hs.188716 ESTs	3.07
55	316667	AW015940	Hs.232234 ESTs	3.07
	324614	AW503101	EST cluster (not in UniGene)	3.07
	316468	AW293046	Hs.255158 ESTs	3.07
	300571	AI239706	Hs.189886 ESTs	3.06
	314301	AW297867	Hs.188181 ESTs	3.05
60	312335	AW043620	Hs.236993 ESTs	3.03
	322957	AA247755	EST cluster (not in UniGene)	3.01
	316848	AA830053	Hs.126798 ESTs	3.01
	313473	AA009660	Hs.251948 ESTs; Moderately similar to T07D3.7 [C.elegans]	2.99
	318518	T27119	EST cluster (not in UniGene)	2.98
65	313383	AI076370	Hs.134037 ESTs	2.97
	331389	AA458637	Hs.152207 ESTs	2.96
	304257	AA053294	EST singleton (not in UniGene) with exon hit	2.95
	309917	AW340014	EST singleton (not in UniGene) with exon hit	2.95
	318661	H08035	Hs.21398 ESTs; Moderately similar to PUTATIVE GLUCOSAMINE-6-PHOSPHATE	2.85

		ISOMERASE [H.sapiens]	2.95
	321253 AI699484	EST cluster (not in UniGene)	2.93
	321193 AA149508 Hs.103288	ESTs	2.93
	332864	CH22_FGENES.28_4	2.92
5	300027		
	M11507	AFFX control: transferrin receptor	2.91
	324330 AA884766	EST cluster (not in UniGene)	2.88
	320014 AA137114 Hs.170291	ESTs	2.88
	333916	CH22_FGENES.296_5	2.88
10	318885 Z43272	EST cluster (not in UniGene)	2.87
	318146 AI040125 Hs.150521	ESTs	2.87
	323348 AA233056 Hs.191518	ESTs	2.85
	305703 AA825148 Hs.21229	F-box protein Fbw1b	2.84
	335862	CH22_FGENES.629_7	2.83
15	317672 AW205409 Hs.127748	ESTs	2.82
	323416 AI610397 Hs.159560	ESTs	2.81
	312652 AI419909 Hs.160994	ESTs	2.81
	324084 AA382603	EST cluster (not in UniGene)	2.81
	319781 R84237	EST cluster (not in UniGene)	2.8
20	317013 AA864468 Hs.135646	ESTs	2.8
	317383 AA913887 Hs.126511	ESTs	2.78
	314659 AW277121 Hs.254881	ESTs	2.78
	312479 AI950844 Hs.128738	ESTs; Weakly similar to non-lens beta gamma-crystallin like protein [H.sapiens]	2.77
	332808	CH22_FGENES.7_10	2.75
25	311824 AW293826 Hs.250610	ESTs	2.75
	321992 C06003 Hs.116456	ESTs	2.73
	316074 AW517542 Hs.208382	ESTs	2.73
	309839 AW296076	EST singleton (not in UniGene) with exon hit	2.73
	312071 AA683529 Hs.143119	ESTs	2.73
30	312684 AW294020 Hs.117721	ESTs	2.72
	332668 AA082971 Hs.181161	ESTs; Weakly similar to INHIBITOR OF APOPTOSIS PROTEIN 1 [M.musculus]	2.72
	322139 H53744	EST cluster (not in UniGene)	2.72
	304168 H77679	EST singleton (not in UniGene) with exon hit	2.72
	325602	CH.13_hs gjl5866994	2.71
35	319885 R59096 Hs.136698	ESTs	2.71
	300611 N75450	EST cluster (not in UniGene) with exon hit	2.71
	316854 AA831215 Hs.159066	ESTs; Weakly similar to predicted using Genefinder [C.elegans]	2.69
	318208 AI091458 Hs.134559	ESTs	2.68
	331623 R38715 Hs.153529	Homo sapiens clone 24540 mRNA sequence	2.68
40	324616 AI823999 Hs.162000	ESTs	2.68
	304958 AA614308	EST singleton (not in UniGene) with exon hit	2.67
	314912 AI431345 Hs.161784	ESTs	2.67
	300767 AW193466 Hs.136525	ESTs	2.67
	313463 AI057369 Hs.122536	ESTs	2.65
45	320600 AA135585 Hs.250739	ESTs	2.65
	301180 AI308989 Hs.156939	ESTs	2.65
	324825 AA704457 Hs.255738	ESTs; Moderately similar to gag [H.sapiens]	2.65
	300336 AW292417 Hs.255074	ESTs; Moderately similar to high-risk human papilloma viruses E6 oncoproteins targeted protein E6TP1 alpha [H.sapiens]	2.64
50	317850 N29974	EST cluster (not in UniGene)	2.64
	339047	CH22_DA59H18.GENSCAN.28-7	2.64
	324580 AA492588	EST cluster (not in UniGene)	2.63
	321142 AI817933 Hs.209584	ESTs	2.62
	319478 R06841	EST cluster (not in UniGene)	2.62
55	300793 AI248571 Hs.186837	ESTs	2.61
	313733 AA836116	EST cluster (not in UniGene)	2.6
	326505	CH.19_hs gjl5867435	2.6
	314987 AW015506 Hs.130730	ESTs	2.6
	303114 AF090948	EST cluster (not in UniGene) with exon hit	2.59
60	318709 H24244 Hs.240763	ESTs; Weakly similar to /prediction	2.58
	312878 AI209108 Hs.143946	ESTs	2.57
	329224	CH.X_hs gjl5868728	2.56
	328018	CH.06_hs gjl5902482	2.56
	323231 AA324437 Hs.177230	ESTs	2.55
65	312887 AW157377 Hs.132910	ESTs	2.55
	315183 AW136134 Hs.220277	ESTs	2.55
	300259 AI478011 Hs.170783	ESTs	2.54
	313240 AI743261 Hs.131860	ESTs	2.54
	316697 AW293174 Hs.252627	ESTs	2.53



	313966	AI807551	Hs.189061	ESTs	2.53
	331263	AA015718		za31a12.s1 Soares retina N2b4HR Homo sapiens cDNA clone IMAGE:36574 3', mRNA sequence	2.51
	310683	AW055233	Hs.160870	ESTs	2.5
5	302566	AA085996	Hs.248572	Human PAC clone DJ404F18 from Xq23	2.5
	302697	AJ001408		EST cluster (not in UniGene) with exon hit	2.5
	308362	AI613519		EST singleton (not in UniGene) with exon hit	2.49
	322347	AF086538		EST cluster (not in UniGene)	2.49
	316240	AA974253	Hs.120319	ESTs	2.49
10	323208	AA203415	Hs.136200	ESTs	2.48
	321643	W76005	Hs.32094	ESTs	2.48
	330723	AA243617	Hs.31082	ESTs; Highly similar to db83 [R.norvegicus]	2.48
	323455	AA256675	Hs.200438	ESTs; Weakly similar to atypical PKC specific binding protein [R.norvegicus]	2.47
	308383	AI624497		EST singleton (not in UniGene) with exon hit	2.47
15	328744			CH.07_hs gj5868290	2.47
	332344	W45574	Hs.252497	ESTs	2.47
	328121			CH.06_hs gj5868031	2.47
	321915	AI670955	Hs.200151	ESTs	2.46
	314954	AA521381	Hs.187726	ESTs	2.45
20	302821	AA188868	Hs.173933	ESTs; Weakly similar to NUCLEAR FACTOR 1/X [H.sapiens]	2.45
	329454			CH.Y_hs gj5868887	2.45
	336605			CH22_FGENES.420_4	2.45
	300664	AI444628	Hs.256809	ESTs	2.44
	323362	AL135067	Hs.117182	ESTs	2.44
25	300024	M10098		AFFX control: 18S ribosomal RNA	2.44
	325026	AI671168	Hs.12285	ESTs	2.43
	324510	AI148353	Hs.120849	ESTs	2.43
	313389	AI765182	Hs.119903	ESTs	2.43
	301309	M78276	Hs.255917	ESTs	2.43
30	313570	AA041455	Hs.209312	ESTs	2.43
	316504	AW135854	Hs.132458	ESTs	2.42
	319401	R01342		EST cluster (not in UniGene)	2.42
	312827	AI744361	Hs.205591	ESTs; Weakly similar to zinc finger protein Png-1 [M.musculus]	2.42
	327871			CH.06_hs gj5868131	2.41
35	337173			CH22_FGENES.565-3	2.41
	302948	AA465635		EST cluster (not in UniGene) with exon hit	2.41
	324303	AL118754		EST cluster (not in UniGene)	2.4
	315527	AI791138	Hs.116768	ESTs	2.4
	315979	AA830515	Hs.222917	ESTs	2.4
40	331310	AA253351	Hs.44439	STAT induced STAT inhibitor-4	2.4
	321095	AA017595	Hs.32844	ESTs	2.4
	308561	AI701559		EST singleton (not in UniGene) with exon hit	2.39
	313035	N36417	Hs.144928	ESTs	2.37
	322114	AA643791	Hs.181740	ESTs	2.37
45	313671	W49823	Hs.145553	ESTs	2.37
	303211	AA099548	Hs.191436	ESTs; Highly similar to dJ1118D24.4 [H.sapiens]	2.37
	301256	AA932948		EST cluster (not in UniGene) with exon hit	2.36
	338165			CH22_EM:AC005500.GENSCAN.212-3	2.36
	324692	AA557952		EST cluster (not in UniGene)	2.35
50	318587	AA779704	Hs.168830	ESTs	2.35
	312378	R41582	Hs.109219	retinal degeneration B beta	2.35
	318625	T48446	Hs.193182	ESTs	2.35
	305181	AA663726	Hs.116922	EST	2.35
	300815	AA286678		EST cluster (not in UniGene) with exon hit	2.34
55	324063	AW292740	Hs.254815	ESTs	2.34
	315859	AA682305	Hs.133268	ESTs	2.33
	305092	AA642912		EST singleton (not in UniGene) with exon hit	2.33
	308598	AI000320		EST singleton (not in UniGene) with exon hit	2.33
	300307	AI651016	Hs.246311	ESTs	2.33
60	321348	Z49979		EST cluster (not in UniGene)	2.33
	325112	AI903770	Hs.124344	ESTs	2.32
	336679			CH22_FGENES.43-7	2.32
	321383	AJ002574		EST cluster (not in UniGene)	2.32
	337357			CH22_FGENES.730-6	2.31
65	300680	AA468066	Hs.257712	ESTs; Weakly similar to KIAA0986 protein [H.sapiens]	2.31
	327120			CH.21_hs gj6531970	2.31
	302761	AW250553		EST cluster (not in UniGene) with exon hit	2.3
	312132	AI475490	Hs.170577	ESTs	2.3
	315639	AA827652		EST cluster (not in UniGene)	2.3

	312189	T95594	Hs.187435	ESTs	2.3
	306537	AA991705		EST singleton (not in UniGene) with exon hit	2.3
	327061			CH21_hs gjl6531865	2.3
5	315391	AA759098	Hs.192007	ESTs	2.3
	322384	AI968646	Hs.33862	ESTs	2.29
	323206	AA203339	Hs.220750	ESTs	2.29
	318110	AI680915	Hs.201379	ESTs	2.28
	335250			CH22_FGENES.516_11	2.28
10	331696	Z38907	Hs.91682	KIAA0888 protein	2.28
	318327	AW294013	Hs.200942	ESTs	2.28
	324980	AA969121	Hs.254296	ESTs	2.28
	319429	AI608881	Hs.11482	ESTs; Highly similar to junctional adhesion molecule [H.sapiens]	2.28
	310601	AI970543	Hs.192605	ESTs	2.28
	318905	Z43395		EST cluster (not in UniGene)	2.28
15	323442	AA252753	Hs.164039	ESTs	2.27
	304428	AA342250	Hs.99819	ubiquitin specific protease 16	2.27
	313352	AW292127	Hs.144758	ESTs	2.27
	316491	AA766025	Hs.238794	EST	2.27
	317751	AI697668	Hs.202241	ESTs	2.26
20	314136	AA229781	Hs.221962	ESTs	2.26
	306665	AI004614	Hs.130577	EST	2.26
	303946	AW474196	Hs.221604	ESTs	2.25
	313435	AA769123		EST cluster (not in UniGene)	2.25
	317679	AA968799	Hs.150289	ESTs	2.25
25	322370	AA330095		EST cluster (not in UniGene)	2.25
	306620	AI000929		EST singleton (not in UniGene) with exon hit	2.24
	329109			CH_X_hs gjl5868626	2.24
	311043	AI871209	Hs.177128	ESTs	2.24
	300228	AI458372	Hs.158748	ESTs; Weakly similar to synapsin Ib [M.musculus]	2.24
30	307223	AI193698	Hs.184776	ribosomal protein L23a	2.24
	309023	AI888045		EST singleton (not in UniGene) with exon hit	2.23
	310749	AI493675	Hs.170332	ESTs	2.23
	316769	AI914939	Hs.212184	ESTs	2.22
	320409	AA358195		EST cluster (not in UniGene)	2.21
35	333149			CH22_FGENES.87_8	2.21
	324951	M86125	Hs.137487	ESTs	2.21
	321939	AI791617	Hs.145068	ESTs	2.2
	320594	AI863952	Hs.169436	arginyltransferase 1	2.2
	320722	R67430	Hs.172787	ESTs	2.2
40	321781	D78667		EST cluster (not in UniGene)	2.2
	328903			CH.08_hs gjl5868514	2.2
	303889	T19204		EST cluster (not in UniGene) with exon hit	2.2
	325045	T08845		EST cluster (not in UniGene)	2.2
45	312828	AI865455	Hs.211818	ESTs; Moderately similar to [!!!] ALU SUBFAMILY J WARNING ENTRY [!!!] [H.sapiens]	2.19
	335109			CH22_FGENES.494_15	2.18
	330878	AA131471	Hs.71440	ESTs	2.18
	311289	AI971362	Hs.231945	ESTs	2.18
	304608	AA513456		EST singleton (not in UniGene) with exon hit	2.18
50	337393			CH22_FGENES.747-4	2.18
	332812			CH22_FGENES.7_14	2.18
	327665			CH.04_hs gjl5867839	2.18
	314581	AW504859	Hs.237849	ESTs	2.17
	326508			CH.19_hs gjl6682496	2.17
55	301242	AW161535	Hs.258803	ESTs	2.17
	312780	AI765651	Hs.172800	ESTs	2.17
	315954	AW276810	Hs.254859	ESTs	2.16
	311179	AI880843	Hs.223333	ESTs	2.16
	315320	AI084182	Hs.186895	ESTs	2.16
	313017	AI015203	Hs.118015	ESTs	2.16
60	312430	AW139117	Hs.117494	ESTs	2.15
	300864	AA406539	Hs.190958	ESTs	2.15
	314753	AA463262		EST cluster (not in UniGene)	2.15
	322574	AF156548		EST cluster (not in UniGene)	2.15
	321409	C03864		EST cluster (not in UniGene)	2.15
65	321205	AA002047		EST cluster (not in UniGene)	2.14
	320406	AA353895	Hs.152983	HUS1 (S. pombe) checkpoint homolog	2.14
	337646			CH22_EM:AC000097.GENSCAN.11-2	2.13
	303084	AF174008		EST cluster (not in UniGene) with exon hit	2.13
	312185	AA654772	Hs.186564	ESTs	2.13

	306813	AI066544	EST singleton (not in UniGene) with exon hit	2.13	
	314465	AA602917	Hs.156974 ESTs	2.12	
	318168	AI821782	Hs.220587 ESTs; Moderately similar to !!!!! ALU SUBFAMILY SC WARNING ENTRY !!!!! [H.sapiens]	2.12	
	315990	AI800041	Hs.180555 ESTs	2.11	
5	320712	R66887	EST cluster (not in UniGene)	2.11	
	318487	AI167877	Hs.143716 ESTs	2.11	
	317462	AW015206	Hs.178784 ESTs	2.11	
	304384	AA235482	Hs.62954 ferritin; heavy polypeptide 1	2.11	
	314544	AA399018	Hs.250835 ESTs	2.1	
10	319881	T72744	EST cluster (not in UniGene)	2.1	
	328078		CH.06_hs gjl5868008	2.1	
	317354	AW090770	Hs.182271 ESTs	2.1	
	308617	AI738720	EST singleton (not in UniGene) with exon hit	2.09	
	311568	AW439869	Hs.218177 ESTs	2.09	
15	313605	AI761786	Hs.204674 ESTs	2.09	
	314289	AA848118	Hs.221216 ESTs	2.08	
	332933		CH22_FGENES.38_7	2.08	
	325498		CH.12_hs gjl5866967	2.08	
	313659	AW286067	Hs.124106 ESTs	2.08	
20	324596	AW149321	Hs.105411 ESTs	2.08	
	324783	AA640770	EST cluster (not in UniGene)	2.07	
	302696	AA347452	EST cluster (not in UniGene) with exon hit	2.07	
	313418	AW450674	Hs.114695 ESTs	2.06	
	326920		CH.21_hs gjl6456782	2.06	
25	327574		CH.03_hs gjl5867818	2.06	
	323207	AI052785	Hs.182201 ESTs	2.06	
	303753	AW503733	Hs.170315 ESTs	2.05	
	305235	AA670480	EST singleton (not in UniGene) with exon hit	2.05	
	316055	AA693880	EST cluster (not in UniGene)	2.05	
30	317194	AW445167	Hs.126036 ESTs	2.05	
	319565	AW408683	Hs.32922 ESTs	2.05	
	335146		CH22_FGENES.499_2	2.05	
	301475	AI678183	Hs.170917 prostaglandin E receptor 3 (subtype EP3)	2.04	
35	312442	AA120970	Hs.143189 ESTs	2.04	
	322502	R62925	Hs.243665 ESTs	2.04	
	303693	AA290875	Hs.30120 ESTs	2.04	
	310179	AI215643	Hs.171381 ESTs	2.03	
	321121	W23285	EST cluster (not in UniGene)	2.03	
40	331330	AA282187	Hs.89002 ESTs; Highly similar to CGI-07 protein [H.sapiens]	2.03	
	306557	AA994530	EST singleton (not in UniGene) with exon hit	2.03	
	317865	AI298794	Hs.129130 ESTs	2.03	
	318667	AI493742	Hs.165210 ESTs	2.02	
	318042	AW294522	Hs.149991 ESTs	2.02	
	323818	AW245528	Hs.134754 ESTs	2.02	
45	331288	AA137062	Hs.103853 ESTs	2.01	
	311262	AI989942	Hs.232150 ESTs	2.01	
	335601		CH22_FGENES.581_41	2.01	
	311351	AI682303	Hs.201274 ESTs	2.01	
50	312996	AA249018	EST cluster (not in UniGene)	2.01	
	328180		CH.06_hs gjl5868077	2	
	338030		CH22_EM:AC005500.GENSCAN.148-16	2	
	333940		CH22_FGENES.301_6	2	
	328227		CH.06_hs gjl5868105	2	
55	331481	N27448	Hs.43944 EST	2	
	335288		CH22_FGENES.527_1	2	
	307513	AI274307	EST singleton (not in UniGene) with exon hit	2	
	323316	AL134620	EST cluster (not in UniGene)	2	
	319479	R21945	Hs.256153 ESTs	2	
	303482	AA502583	Hs.197271 ESTs	2	
60	327489		CH.02_hs gjl6004459	1.99	
	323935	AW175841	Hs.192183 ESTs	1.99	
	309575	AW168096	Hs.195188 glyceraldehyde-3-phosphate dehydrogenase	1.99	
	337043		CH22_FGENES.439-19	1.98	
	312897	AI828174	Hs.227049 ESTs	1.98	
65	307881	AI370434	EST singleton (not in UniGene) with exon hit	1.98	
	328656		CH.07_hs gjl6004473	1.98	
	314569	AA813784	Hs.123001 ESTs	1.98	
	332783	W45302	Hs.87889 helicase-moi	1.98	
	315259	AA701499	Hs.148115 ESTs	1.98	

	313171	N67879	Hs.157695	ESTs	1.97
	318060	AI241421	Hs.132238	ESTs	1.97
	332256	N66393	Hs.102754	ESTs	1.97
	312110	AI962180	Hs.226803	ESTs	1.97
5	335884		CH22_FGENES.629_9		1.97
	320389	W00545	Hs.171785	ESTs	1.97
	314065	AA868267	Hs.85524	ESTs	1.96
	323086	H15474	Hs.12214	Homo sapiens clone 23716 mRNA sequence	1.96
	323919	AA862973	Hs.220704	ESTs	1.96
10	310750	AI373163	Hs.170333	ESTs	1.96
	309435	AW090537		EST singleton (not in UniGene) with exon hit	1.96
	300129	AW028820		EST cluster (not in UniGene) with exon hit	1.96
	320130	AI820675	Hs.203804	ESTs	1.95
	323787	AW373446	Hs.169885	ESTs; Weakly similar to cDNA EST EMBL:U02216 comes from this gene [C.elegans]	1.95
15	338112		CH22_EM:AC005500.GENSCAN.185-24		1.95
	313625	AW468402	Hs.254020	ESTs	1.95
	325240		CH.10_hs gi 5866848		1.95
	331833	AA412102	Hs.250911	interleukin 13 receptor; alpha 1	1.95
20	332252	N63882		za2119.s1 Soares fetal liver spleen 1NFS Homo sapiens cDNA clone IMAGE:293225 3', mRNA sequence	1.95
	300279	AW237425	Hs.253817	ESTs	1.95
	326023		CH.17_hs gi 5867245		1.95
	321609	H86021	Hs.198800	ESTs; Weakly similar to hMmTRA1b [H.sapiens]	1.94
	324183	AA402453	Hs.113011	ESTs	1.94
25	336276		CH22_FGENES.762_5		1.94
	334913		CH22_FGENES.456_3		1.94
	325417		CH.12_hs gi 5866925		1.94
	318489	AW043590	Hs.225023	ESTs	1.94
	318455	AI148763		EST cluster (not in UniGene)	1.94
30	306890	AI092235		EST singleton (not in UniGene) with exon hit	1.94
	315073	AW452948	Hs.257631	ESTs	1.94
	321289	R84687	Hs.226306	ESTs	1.94
	308521	AI689808		EST singleton (not in UniGene) with exon hit	1.93
	306382	AA968967		EST singleton (not in UniGene) with exon hit	1.93
35	331320	AA262899	Hs.42788	ESTs	1.93
	324279	AA501412	Hs.191688	ESTs; Weakly similar to Pro-Pol-dUTPase polypeptide [M.musculus]	1.93
	309577	AW168753		EST singleton (not in UniGene) with exon hit	1.93
	327014		CH.21_hs gi 5867664		1.93
	303488	AW025860		EST cluster (not in UniGene) with exon hit	1.93
40	306561	AA995223	Hs.129559	EST	1.92
	330694	AA019806	Hs.108447	spinocerebellar ataxia 7 (olivopontocerebellar atrophy with retinal degeneration)	1.92
	313083	N50545	Hs.158200	ESTs	1.92
	327752		CH.05_hs gi 5867949		1.92
	318874	AA285490		EST cluster (not in UniGene)	1.92
45	301267	AW297762	Hs.255690	ESTs	1.91
	332092	AA608787	Hs.112590	ESTs	1.91
	323509	AL036947		EST cluster (not in UniGene)	1.91
	321452	AA317554		EST cluster (not in UniGene)	1.91
	311483	AI765013	Hs.209128	ESTs	1.91
50	300976	AI246374	Hs.165881	ESTs	1.91
	323715	AA322155		EST cluster (not in UniGene)	1.91
	313800	AW296132	Hs.166674	ESTs	1.91
	332029	AA489697	Hs.145053	ESTs	1.91
	304013	AW518573	Hs.156110	Immunoglobulin kappa variable 1D-8	1.91
55	322019	AA354549	Hs.41181	Homo sapiens mRNA; cDNA DKFZp727C191 (from clone DKFZp727C191)	1.91
	334150		CH22_FGENES.339_1		1.9
	310094	AW450967	Hs.235240	ESTs	1.9
	316218	AW207642	Hs.174021	ESTs	1.9
	324774	AI031771	Hs.132586	ESTs	1.9
60	326507		CH.19_hs gi 5867435		1.9
	314570	AA405696		EST cluster (not in UniGene)	1.9
	336268		CH22_FGENES.758_2		1.9
	315278	AI985544	Hs.116429	ESTs	1.9
	325824		CH.15_hs gi 5867048		1.9
65	316277	AA737780	Hs.213392	ESTs	1.9
	323181	AA418583	Hs.143821	ESTs	1.9
	301438	AA961643	Hs.127716	ESTs	1.89
	307050	AI147341	Hs.146734	EST	1.89
	306830	AI075803		EST singleton (not in UniGene) with exon hit	1.89

	302426	AL049925	Hs.225984	DKFZP547G0910 protein	1.89
	320127	H72615	Hs.17268	ESTs	1.89
	337736			CH22_EM:AC000097.GENSCAN.100-2	1.89
5	331319	AA262755	Hs.194264	ESTs	1.88
	310767	AJ377505	Hs.158835	ESTs	1.88
	314880	AJ732169	Hs.105428	ESTs	1.88
	312539	AJ004377	Hs.200360	ESTs	1.88
	309874	AW205604	Hs.168034	ESTs; Weakly similar to !!!!! ALU SUBFAMILY SP WARNING ENTRY !!!!! [H.sapiens]	1.88
	314621	AJ627478	Hs.187670	ESTs	1.88
10	318495	AJ972146	Hs.182756	ESTs	1.88
	313472	AA007374		EST cluster (not in UniGene)	1.88
	302705	U09060		EST cluster (not in UniGene) with exon hit	1.88
	328511			CH.10_p2 gi 3983514	1.88
	317140	AJ699412	Hs.201825	ESTs	1.87
15	302598	AJ815985	Hs.129683	ubiquitin-conjugating enzyme E2D 1 (homologous to yeast UBC4/5)	1.87
	301153	AA725670	Hs.120485	ESTs; Weakly similar to serine/threonine kinase with SH3 domain; leucine zipper domain and proline rich domain [H.sapiens]	1.87
	332222	N28271	Hs.178618	ESTs	1.87
20	330703	AA055475	Hs.104143	clathrin; light polypeptide (Lca)	1.87
	318470	AJ159863	Hs.143713	ESTs	1.87
	314014	AW291847	Hs.121715	ESTs; Weakly similar to HP protein [H.sapiens]	1.87
	300370	AJ827817		EST cluster (not in UniGene) with exon hit	1.86
	312329	R84768	Hs.13399	Homo sapiens clone 25032 mRNA sequence	1.86
	325587			CH.12_hs gi 5682462	1.86
25	310237	AJ884313	Hs.158906	ESTs	1.86
	318872	R13085		EST cluster (not in UniGene)	1.86
	303431	AA317915		EST cluster (not in UniGene) with exon hit	1.86
	338427			CH22_EM:AC005500.GENSCAN.349-1	1.86
	300452	AJ352293	Hs.191098	ESTs	1.85
30	321279	H85330	Hs.146060	ESTs	1.85
	301690	F05865	Hs.249180	ubiquitin-conjugating enzyme E2E 2 (homologous to yeast UBC4/5)	1.85
	307932	AJ230822		EST singleton (not in UniGene) with exon hit	1.85
	318292	AJ679966	Hs.150603	ESTs	1.85
	310254	AJ239811	Hs.157491	ESTs	1.85
35	311790	AW016437	Hs.233462	ESTs	1.84
	314248	AA278347	Hs.126078	ESTs	1.84
	335586			CH22_FGENES.581_25	1.84
	339209			CH22_FF113D11.GENSCAN.6-4	1.84
	307854	AJ419692		EST singleton (not in UniGene) with exon hit	1.84
40	302549	AF055136	Hs.248162	tectonin alpha	1.84
	321829	H87213	Hs.158092	ESTs	1.84
	301239	AA807558		EST cluster (not in UniGene) with exon hit	1.84
	332434	N75542	Hs.75356	transcription factor 4	1.84
	327182			CH.01_hs gi 5867445	1.83
45	310214	AJ220072	Hs.165893	ESTs	1.83
	320516	R33857	Hs.181479	ESTs; Weakly similar to E-SELECTIN PRECURSOR [H.sapiens]	1.83
	324231	W60827		EST cluster (not in UniGene)	1.83
	336616			CH22_FGENES.613_5	1.83
	328799			CH.07_hs gi 5868316	1.83
50	324661	AW504161		EST cluster (not in UniGene)	1.83
	313190	AA766707	Hs.153039	ESTs	1.83
	301879	L28168	Hs.121495	potassium voltage-gated channel; Isk-related family; member 1	1.82
	302099	AL021397	Hs.137576	ribosomal protein L34 pseudogene 1	1.82
	320187	T99949		EST cluster (not in UniGene)	1.82
55	320791	R78808	Hs.93961	ESTs; Weakly similar to !!!!! ALU CLASS A WARNING ENTRY !!!!! [H.sapiens]	1.82
	305733	AA829535	Hs.84298	CD74 antigen (invariant polypept of MHC; class II antigen-associated)	1.82
	308280	AJ569349	Hs.180920	ribosomal protein S9	1.81
	321533	W78877	Hs.40111	ESTs	1.81
	312946	AJ915122	Hs.204087	ESTs; Weakly similar to F33D11.9b [C.elegans]	1.81
60	319474	H90265	Hs.100636	ESTs	1.81
	329519			CH.10_p2 gi 3983510	1.81
	324685	AA220982		EST cluster (not in UniGene)	1.81
	320697	N62937	Hs.139181	ESTs	1.81
	329246			CH.X_hs gi 5868732	1.81
65	332000	AA481271	Hs.193945	ESTs	1.81
	310811	AJ420990	Hs.161303	ESTs	1.81
	325866			CH.16_hs gi 5867076	1.81
	322064	Z78343		EST cluster (not in UniGene)	1.8
	333712			CH22_FGENES.251_1	1.8

	313457	AA576052	Hs.193223	ESTs	1.8
	321591	H85687	Hs.117927	ESTs	1.8
	330260		CH.05_p2 g  5671884		1.8
5	311080	AI856320	Hs.197711	ESTs	1.8
	329522		CH.10_p2 g  3983507		1.8
	322889	AA081924	Hs.211417	ESTs	1.8
	300175	AI275011	Hs.204877	ESTs	1.8
	330976	H20560	Hs.244824	ESTs	1.8
10	300208	AI341180	Hs.196115	ESTs; Weakly similar to FIBRILLIN 1 PRECURSOR [H.sapiens]	1.79
	319635	R17531		EST cluster (not in UniGene)	1.79
	313454	AA730673	Hs.188634	ESTs	1.79
	303093	AI400310	Hs.148958	ESTs	1.79
	309815	AW292760		EST singleton (not in UniGene) with exon hit	1.79
	326506		CH.19_hs g  5667435		1.79
15	319845	AA849011	Hs.187902	ESTs	1.79
	300290	AI623739	Hs.186387	ESTs	1.79
	312180	AI248285	Hs.118348	ESTs	1.79
	313058	D81015	Hs.125382	ESTs	1.79
20	330120		CH.19_p2 g  5671864		1.78
	328412		CH.07_hs g  5668405		1.78
	302345	NM_000565		EST cluster (not in UniGene) with exon hit	1.78
	308100	AI475949		EST singleton (not in UniGene) with exon hit	1.78
	311388	AW205705	Hs.207514	ESTs	1.78
	330282		CH.05_p2 g  5671910		1.78
25	318856	Z43011	Hs.21169	ESTs	1.78
	312486	AA845630	Hs.117904	ESTs	1.78
	325450		CH.12_hs g  5666941		1.78
	321206	H54178	Hs.226469	ESTs	1.78
	330977	H20826	Hs.31783	ESTs	1.78
30	303487	AA333666		EST cluster (not in UniGene) with exon hit	1.77
	310398	AI264671	Hs.164166	ESTs	1.77
	313230	AI540168	Hs.129563	ESTs	1.77
	317747	AI683782	Hs.128245	ESTs	1.77
35	303381	AL038841	Hs.163313	ESTs; Weakly similar to !!!! ALU SUBFAMILY SB WARNING ENTRY !!!! [H.sapiens]	1.77
	336123		CH22_FGENES.701_8		1.77
	300185	AI286182	Hs.208484	ESTs	1.77
	316002	AW451733	Hs.119824	ESTs	1.77
	319850	AA001811	Hs.83722	ESTs	1.77
40	329941		CH.16_p2 g  8165199		1.77
	328329		CH.07_hs g  5868375		1.77
	322934	AI493054	Hs.158968	ESTs	1.77
	325902		CH.16_hs g  5867101		1.76
	322239	W01813	Hs.12109	WD40 protein C1a01	1.76
	303530	AI274851	Hs.258744	ESTs	1.76
45	300980	AI025527	Hs.222097	ESTs	1.76
	331909	AA437300	Hs.178210	ESTs	1.76
	321553	H92449	Hs.116408	ESTs	1.76
	301618	T52760		EST cluster (not in UniGene) with exon hit	1.76
50	319592	AA627356	Hs.163315	ESTs	1.76
	318511	T26528	Hs.227175	ESTs; Weakly similar to !!!! ALU SUBFAMILY SQ WARNING ENTRY !!!! [H.sapiens]	1.76
	327183		CH.01_hs g  5867442		1.76
	313516	AA029058	Hs.135145	ESTs	1.76
	318644	AI752482		EST cluster (not in UniGene)	1.76
55	321632	AA419617		EST cluster (not in UniGene)	1.76
	324657	AW451142	Hs.255628	ESTs	1.76
	300437	AW449374	Hs.257149	ESTs	1.75
	319775	AA504429	Hs.6211	methy-CpG binding domain protein 1	1.75
	314775	AI149880	Hs.188809	ESTs	1.75
	337480		CH22_FGENES.780-5		1.75
60	309849	AW297444		EST singleton (not in UniGene) with exon hit	1.75
	301471	AA995014	Hs.129544	ESTs; Weakly similar to ORF YLL027w [S.cerevisiae]	1.75
	312739	AI318428	Hs.155925	ESTs	1.75
	319995	H15355	Hs.60887	ESTs	1.75
65	326485		CH.19_hs g  5867423		1.75
	337497		CH22_FGENES.801-4		1.75
	322633	AA004534	Hs.153981	ESTs	1.75
	332177	F10812	Hs.101433	ESTs	1.75
	326930		CH.21_hs g  8456782		1.75
	316893	AA837332		EST cluster (not in UniGene)	1.75

	324826	AA704806	Hs.143842	ESTs	1.75
	311269	AI656924	Hs.174257	ESTs	1.75
	309375	AW075342		EST singleton (not in UniGene) with exon hit	1.75
5	314171	AI821895	Hs.193481	ESTs	1.75
	311884	AI990741	Hs.252809	ESTs	1.75
	334387			CH22_FGENES.380_1	1.75
	312195	AI300101	Hs.252222	ESTs	1.75
	315707	AI418055	Hs.181160	ESTs	1.74
	324349	AW501470		EST cluster (not in UniGene)	1.74
10	300724	AI762929	Hs.206134	ESTs; Weakly similar to similar to reverse transcriptase [C.elegans]	1.74
	309906	AW339340		EST singleton (not in UniGene) with exon hit	1.74
	303714	AW501336		EST cluster (not in UniGene) with exon hit	1.74
	318704	Z24981		EST cluster (not in UniGene)	1.74
	303027	AF111178		EST cluster (not in UniGene) with exon hit	1.74
15	322601	W92924		EST cluster (not in UniGene)	1.74
	319382	H93199	Hs.33665	ESTs	1.74
	315858	AA737345		EST cluster (not in UniGene)	1.74
	332243	N55484	Hs.220540	ESTs; Highly similar to ARYL HYDROCARBON RECEPTOR NUCLEAR TRANSLOCATOR [H.sapiens]	1.74
20	330951	H02566	Hs.191268	Homo sapiens mRNA; cDNA DKFZp434N174 (from clone DKFZp434N174)	1.74
	324044	AL045752	Hs.211519	ESTs	1.73
	320630	AA199847		EST cluster (not in UniGene)	1.73
	327288			CH.01_hs gj5867481	1.73
	314986	AI201367	Hs.142860	ESTs	1.73
25	319078	H17255	Hs.144515	ESTs	1.73
	326278			CH.17_hs gj5867269	1.73
	302552	H49792		EST cluster (not in UniGene) with exon hit	1.73
	322322	AF086431		EST cluster (not in UniGene)	1.73
	327075			CH.21_hs gj6531965	1.73
30	317392	AI797588	Hs.145459	ESTs	1.73
	300810	AI076890	Hs.186949	ESTs	1.73
	315978	AA830893	Hs.119769	ESTs	1.73
	323903	AA773580	Hs.193598	ESTs	1.73
	330803	AA004699	Hs.150580	putative translation initiation factor	1.73
35	309845	AW296802	Hs.255580	EST	1.73
	314963	AI689617	Hs.200934	ESTs	1.73
	311710	F09774	Hs.175971	ESTs	1.73
	315315	AI984582	Hs.15088	ESTs	1.73
	300378	AA663560	Hs.235873	ESTs; Weakly similar to K11C4.2 [C.elegans]	1.73
40	316141	AW303457		EST cluster (not in UniGene)	1.72
	318826	T71739	Hs.75442	albumin	1.72
	312961	AI033922	Hs.122517	ESTs	1.72
	334379			CH22_FGENES.379_11	1.72
	305854	AA862733		EST singleton (not in UniGene) with exon hit	1.72
45	313031	N34927	Hs.186566	ESTs	1.72
	329728			CH.14_p2 gj6065785	1.72
	312090	N57692	Hs.118064	ESTs	1.72
	323341	AL134875	Hs.192386	ESTs	1.72
	302077	AA310580	Hs.132898	Homo sapiens chromosome 11; BAC CIT-HSP-311e8 (BC269730) containing the hFEN1 gene	1.71
50	310766	AI971438	Hs.158824	ESTs	1.71
	311450	AI809985	Hs.203340	ESTs	1.71
	311792	AW238064	Hs.253909	ESTs	1.71
	321500	H71899		EST cluster (not in UniGene)	1.71
55	311948	T78791	Hs.241569	ESTs; Moderately smir to !!!!! ALU SUBFAMILY SQ WARNING ENTRY !!!!! [H.sapiens]	1.71
	302270	R56151		EST cluster (not in UniGene) with exon hit	1.71
	329089			CH.X_hs gj5868614	1.71
	322331	AF086467		EST cluster (not in UniGene)	1.71
	318235	AI080361	Hs.134217	ESTs	1.71
60	304561	AA489792		EST singleton (not in UniGene) with exon hit	1.71
	312681	AI028149	Hs.193124	pyruvate dehydrogenase kinase; isoenzyme 3	1.71
	310250	AI478829	Hs.158465	ESTs	1.71
	338178			CH22_EM:AC005500.GENSCAN.219-6	1.71
	338910			CH22_DJ32110.GENSCAN.11-2	1.71
65	321225	AL080073	Hs.251414	Homo sapiens mRNA; cDNA DKFZp564B1462 (from clone DKFZp564B1462)	1.7
	322289	AA534550	Hs.539	ribosomal protein S29	1.7
	318802	AI701489	Hs.202501	ESTs	1.7
	314022	AW452420	Hs.248678	ESTs	1.7
	314937	AA515602	Hs.152330	ESTs	1.7

	300580	AA761322	Hs.220538	ESTs	1.7
	304398	AA262785		EST singleton (not in UniGene) with exon hit	1.7
	313421	AW339515	Hs.163700	ESTs	1.7
	309763	AW270182		EST singleton (not in UniGene) with exon hit	1.7
5	322092	AF085833		EST cluster (not in UniGene)	1.7
	315603	AA764768	Hs.121158	ESTs	1.7
	325031	T08597		EST cluster (not in UniGene)	1.7
	327157			CH.01_hs gi 5866841	1.7
	314809	AI741461	Hs.161804	ESTs	1.7
10	320361	H67220	Hs.146406	nitrilase 1	1.69
	324721	AW402302	Hs.43616	ESTs	1.69
	328624			CH.07_hs gi 5868246	1.69
	303344	AA255977	Hs.250646	ESTs; Highly similar to ubiquitin-conjugating enzyme [M.musculus]	1.69
	328960			CH.08_hs gi 6456775	1.69
15	315702	AA657501	Hs.146315	ESTs	1.69
	302385	AJ224172	Hs.204096	lipophilin B (uteroglobin family member); prostatein-like	1.68
	319699	R14537		EST cluster (not in UniGene)	1.68
	309506	AW137700		EST singleton (not in UniGene) with exon hit	1.68
	330417	D84424	Hs.57697	hyaluronan synthase 1	1.68
20	315296	AA876905	Hs.125286	ESTs	1.68
	328538			CH.07_hs gi 5868485	1.68
	323923	AA354146		EST cluster (not in UniGene)	1.68
	320903	AL079289	Hs.137154	Homo sapiens mRNA full length insert cDNA clone EUROIMAGE 35971	1.68
	302967	AI927068	Hs.110853	ESTs; Weakly similar to R10D12.12 [C.elegans]	1.68
25	310695	AI472124	Hs.157757	ESTs	1.68
	307512	AI273815	Hs.242463	keratin 8	1.68
	338506			CH22_EM:AC005500.GENSCAN.390-10	1.68
	331722	AA195405	Hs.110347	Homo sapiens mRNA for alpha integrin binding protein 80; partial	1.68
	301431	R05385		EST cluster (not in UniGene) with exon hit	1.68
30	318853	Z42977	Hs.21062	ESTs	1.68
	323032	AW244073	Hs.145946	ESTs	1.68
	317538	AW137772	Hs.185980	ESTs	1.68
	325780			CH.14_hs gi 6381853	1.67
35	321739	AL080280		EST cluster (not in UniGene)	1.67
	319808	T58960		EST cluster (not in UniGene)	1.67
	313443	AA249037		EST cluster (not in UniGene)	1.67
	331366	AA424754	Hs.43149	ESTs	1.67
	316443	AI797592	Hs.207407	ESTs	1.67
40	322878	AA081820		EST cluster (not in UniGene)	1.67
	330320			CH.08_p2 gi 5932415	1.67
	329081			CH.X_hs gi 5868602	1.67
	334026			CH22_FGENES.318_3	1.67
	317791	AI801500	Hs.128457	ESTs	1.67
	322235	AF086106		EST cluster (not in UniGene)	1.66
45	331148	R73816	Hs.17385	ESTs	1.66
	325452			CH.12_hs gi 5866941	1.66
	315106	AW452184	Hs.232100	ESTs	1.66
	326014			CH.16_hs gi 5867160	1.66
	307130	AI185234		EST singleton (not in UniGene) with exon hit	1.66
50	300943	AA524545	Hs.224630	ESTs	1.66
	319402	W21298		EST cluster (not in UniGene)	1.66
	310889	AI457946	Hs.170437	ESTs; Weakly similar to hyperpolarization-activated; cyclic nucleotide-gated channel 2 [H.sapiens]	1.66
				EST cluster (not in UniGene)	1.66
55	323371	AL135118		CH22_FGENES.581_4	1.66
	335568				1.66
	320654	AW263086	Hs.118112	ESTs	1.66
	338983			CH22_DA59H18.GENSCAN.3-1	1.65
	330002			CH.16_p2 gi 6623963	1.65
60	315343	AW205477	Hs.178891	ESTs	1.65
	334487			CH22_FGENES.385_9	1.65
	312169	AI064824	Hs.193385	ESTs	1.65
	309688	AW204480	Hs.253414	EST	1.65
	309518	AW148928	Hs.248895	EST	1.65
	307965	AI421641		EST singleton (not in UniGene) with exon hit	1.65
65	316787	AW369770	Hs.130351	ESTs	1.65
	300835	AA401858	Hs.224843	ESTs	1.65
	338763			CH22_EM:AC005500.GENSCAN.517-16	1.65
	303327	AA232729	Hs.154302	ESTs	1.65
	313231	AW139993	Hs.163682	ESTs	1.65



	334073		CH22_FGENES.327_28	1.65
	319901 T77138	Hs.8765	RNA helicase-related protein	1.65
	326530		CH.19_hs g 5867441	1.65
5	301126 A1802877	Hs.210843	ESTs; Weakly similar to dJ1039K5.2 [H.sapiens]	1.65
	314043 AA827082		EST cluster (not in UniGene)	1.65
	304387 AA236027		EST singleton (not in UniGene) with exon hit	1.65
	322932 AA099732		EST cluster (not in UniGene)	1.65
	337272		CH22_FGENES.660-1	1.64
10	332694 AA262768	Hs.243901	KIAA1067 protein	1.64
	318996 Z44266		EST cluster (not in UniGene)	1.64
	315336 AW342028	Hs.256112	ESTs	1.64
	313329 AW293704	Hs.122658	ESTs	1.64
	318088 AW285409	Hs.137945	ESTs	1.64
	313835 A1538438	Hs.159067	ESTs	1.64
15	320035 AA378974	Hs.130720	ESTs; Weakly similar to CELLULAR NUCLEIC ACID BINDING PROTEIN [H.sapiens]	1.64
	309372 AW074330		EST singleton (not in UniGene) with exon hit	1.63
	324157 AW402238		EST cluster (not in UniGene)	1.63
	323929 AA354940	Hs.145958	ESTs	1.63
	302490 AA885502	Hs.187032	ESTs	1.63
20	333942		CH22_FGENES.301_8	1.63
	327469		CH.02_hs g 5867772	1.63
	301918 AA476777		EST cluster (not in UniGene) with exon hit	1.63
	315664 A1744068	Hs.160712	ESTs	1.63
	304405 AA282572		EST singleton (not in UniGene) with exon hit	1.63
25	310824 A1341594	Hs.157522	ESTs; Moderately similar to env protein [H.sapiens]	1.63
	319250 F11623		EST cluster (not in UniGene)	1.63
	310608 A1962234	Hs.196102	ESTs	1.63
	317348 A1348076	Hs.831	3-hydroxymethyl-3-methylglutaryl-Coenzyme A lyase (hydroxymethylglutaricaciduria)	1.63
	306513 AA989230		EST singleton (not in UniGene) with exon hit	1.63
30	320807 AA086110	Hs.188536	Homo sapiens clone 24838 mRNA sequence	1.63
	303710 A1269069	Hs.250852	ESTs; Highly similar to ubiquitin hydrolyzing enzyme I [H.sapiens]	1.63
	328291		CH.07_hs g 5868363	1.63
	304236 W93278		EST singleton (not in UniGene) with exon hit	1.63
	317683 A1791700	Hs.127693	ESTs	1.63
35	311960 AW440133	Hs.189690	ESTs	1.62
	312834 A1028309	Hs.114246	ESTs	1.62
	325326		CH.11_hs g 5866875	1.62
	313663 A1953261	Hs.169813	ESTs	1.62
	327526		CH.02_hs g 6381882	1.62
40	300429 AW449679	Hs.156739	ESTs; Highly similar to XG GLYCOPROTEIN PRECURSOR [H.sapiens]	1.62
	305169 AA663131		EST singleton (not in UniGene) with exon hit	1.62
	316621 A1021996	Hs.122138	ESTs	1.62
	329866		CH.14_p2 g 6272129	1.62
45	318035 A1744130	Hs.131201	ESTs	1.62
	300492 AL031709		multiple UniGene matches	1.62
	316532 A1307229	Hs.184304	ESTs	1.62
	332048 AA496019	Hs.201591	ESTs	1.62
	307113 A183686		EST singleton (not in UniGene) with exon hit	1.62
	319127 N49476		EST cluster (not in UniGene)	1.62
50	331155 R87650	Hs.33439	ESTs; Weakly similar to !!! ALU SUBFAMILY J WARNING ENTRY !!! [H.sapiens]	1.61
	338220		CH22_EM:AC005500.GENSCAN.246-9	1.61
	315763 AW515270	Hs.118342	ESTs	1.61
	323571 AA984133	Hs.153260	o-CbH-interacting protein	1.61
55	312240 R28628	Hs.203669	ESTs	1.61
	304569 AA490934		EST singleton (not in UniGene) with exon hit	1.61
	313179 A1076101	Hs.131704	ESTs	1.61
	326858		CH.20_hs g 6552462	1.61
	317276 A1823847	Hs.129986	ESTs	1.61
	312572 AA350125	Hs.187499	ESTs	1.61
60	311832 AW451654	Hs.257482	ESTs	1.61
	302103 AA452310	Hs.26090	ESTs; Weakly similar to T20B12.1 [C.elegans]	1.61
	308413 A1636253	Hs.196511	EST	1.61
	310077 A1620617	Hs.148565	ESTs	1.61
	337780		CH22_EM:AC000097.GENSCAN.121-2	1.61
65	327796		CH.05_hs g 5867982	1.61
	308352 A1610791		EST singleton (not in UniGene) with exon hit	1.61
	324539 A1378032	Hs.125892	ESTs	1.61
	303232 AA437414		EST cluster (not in UniGene) with exon hit	1.61
	337884		CH22_EM:AC005500.GENSCAN.54-2	1.61

	303620	AA397546	Hs.119151	ESTs	1.61
	303481	AA336839		EST cluster (not in UniGene) with exon hit	1.61
	314481	AA548589	Hs.105846	ESTs	1.61
5	300327	AI908894	Hs.245893	ESTs	1.6
	323473	AA262442		EST cluster (not in UniGene)	1.6
	326154			CH.17_hs gll5867170	1.6
	331920	AA446885	Hs.69087	ESTs; Moderately similar to ZINC FINGER PROTEIN 141 [H.sapiens]	1.6
	323827	AW406878		EST cluster (not in UniGene)	1.6
	322452	W56710		EST cluster (not in UniGene)	1.6
10	310597	AI739071	Hs.158515	ESTs	1.6
	307871	AI368665		EST singleton (not in UniGene) with exon hit	1.6
	322215	AF088005		EST cluster (not in UniGene)	1.6
	318420	AI139857	Hs.143837	ESTs	1.6
	332217	H98987	Hs.102383	EST	1.6
15	324937	M79230	Hs.192398	ESTs	1.6
	320543	AF052176	Hs.158529	Homo sapiens clone 24457 mRNA sequence	1.6
	300674	AW467388		EST cluster (not in UniGene) with exon hit	1.6
	315193	AI241331	Hs.131765	ESTs	1.6
	319713	R24204		EST cluster (not in UniGene)	1.6
20	301210	AI379982	Hs.158944	ESTs	1.6
	309365	AW072861		EST singleton (not in UniGene) with exon hit	1.6
	321403	AW451454	Hs.247568	adenylate kinase 3	1.6
	321908	AA376936	Hs.20998	ESTs	1.6
	303349	AA382661		EST cluster (not in UniGene) with exon hit	1.6
25	324338	AL138357	Hs.247514	ESTs	1.6
	310599	AW300144		EST cluster (not in UniGene)	1.6
	333193			CH22_FGENES.98_15	1.6
	336433			CH22_FGENES.825_12	1.6
	312097	AI352096	Hs.157169	ESTs	1.6
30	311445	AW204237	Hs.192703	ESTs; Weakly similar to !!! ALU SUBFAMILY J WARNING ENTRY !!! [H.sapiens]	1.59
	317736	AI361722	Hs.192410	ESTs	1.59
	308147	AI498991		EST singleton (not in UniGene) with exon hit	1.59
	313489	AA017492	Hs.135655	ESTs	1.59
	316289	AA902488	Hs.122952	ESTs	1.59
35	326983			CH.21_hs gll5867657	1.59
	314781	AW205298	Hs.202372	ESTs	1.59
	328397			CH.07_hs gll5868397	1.59
	331970	AA461084	Hs.187677	ESTs	1.59
	321744	N91419	Hs.12028	ESTs	1.59
40	310509	AI292181	Hs.150036	ESTs	1.59
	316921	AI147545	Hs.114172	ESTs	1.59
	322049	AI928242	Hs.144383	ESTs	1.59
	301161	AA731518		EST cluster (not in UniGene) with exon hit	1.59
	300548	AI026836	Hs.114689	ESTs	1.59
45	319142	F07368		EST cluster (not in UniGene)	1.59
	313526	AW152263	Hs.249243	ESTs	1.59
	305937	AA863238		EST singleton (not in UniGene) with exon hit	1.58
	330123			CH.19_p2 gll5671869	1.58
50	327819			CH.05_hs gll5867968	1.58
	318250	AI478814	Hs.134603	ESTs	1.58
	306760	AI034094	Hs.169476	tubulin; alpha; ubiquitous	1.58
	322358	AA220235	Hs.246838	ESTs	1.58
	317866	AI690269	Hs.201345	ESTs	1.58
	320725	AA703319	Hs.120967	ESTs	1.58
55	311332	AW292247	Hs.255052	ESTs	1.58
	334893			CH22_FGENES.452_7	1.58
	318730	AA398215		EST cluster (not in UniGene)	1.58
	315889	AW271639	Hs.221744	ESTs	1.58
60	303702	AW500748	Hs.224961	ESTs; Weakly similar to 73 kDA subunit of cleavage and polyadenylation specificity factor [H.sapiens]	1.57
	315086	AI492660	Hs.170935	ESTs	1.57
	332514	AA156499	Hs.8454	protein kinase; cAMP-dependent; regulatory; type II; alpha	1.57
	335549			CH22_FGENES.576_10	1.57
	329532			CH.10_p2 gll3983505	1.57
65	323140	AA180467		EST cluster (not in UniGene)	1.57
	313166	AI801098	Hs.151500	ESTs	1.57
	337896			CH22_EM:AC005500.GENSCAN.56-3	1.57
	330658	AA319514	Hs.211093	ESTs	1.57
	324585	AI823969	Hs.132678	ESTs	1.57

	317151	AW288195	Hs.255735	ESTs	1.57
	306818	AI819700	Hs.208231	EST	1.57
	326547		CH.19_hs g 5867307		1.57
5	318833	H06234	Hs.24888	ESTs	1.57
	320488	R31386		EST cluster (not in UniGene)	1.57
	306929	AI124514		EST singleton (not in UniGene) with exon hit	1.57
	338083			CH22_EM:AC005500.GENSCAN.174-1	1.57
	316868	AI660898	Hs.185602	ESTs	1.57
10	310837	AI472880	Hs.170480	ESTs	1.57
	328638			CH.07_hs g 6004473	1.57
	310074	AI651039	Hs.148559	ESTs	1.56
	327058			CH.21_hs g 6531865	1.56
	320076	AI653733	Hs.204079	ESTs	1.56
	322345	AF086529		EST cluster (not in UniGene)	1.56
15	314731	AI745498	Hs.204579	ESTs	1.56
	316687	H49819	Hs.127301	ESTs	1.56
	303841	AI934464		EST cluster (not in UniGene) with exon hit	1.56
	302370	AJ009849	Hs.199297	Homo sapiens GNAS1 gene encoding NESP55	1.56
	322571	AF158271		EST cluster (not in UniGene)	1.56
20	318050	AI052093	Hs.133132	ESTs	1.56
	303388	AL039604		EST cluster (not in UniGene) with exon hit	1.56
	323758	AA833858		EST cluster (not in UniGene)	1.56
	328369			CH.07_hs g 5868388	1.56
	329415			CH.Y_hs g 5868874	1.56
25	303915	AW468839	Hs.257767	EST	1.56
	338794			CH22_EM:AC005500.GENSCAN.528-1	1.56
	303074	AA243481	Hs.127320	ESTs; Weakly similar to KIAA0346 [H.sapiens]	1.56
	318807	F08434		EST cluster (not in UniGene)	1.56
	334287			CH22_FGENES.369_17	1.56
30	311828	AW024798	Hs.233374	ESTs	1.55
	304592	AA505833	Hs.162017	EST	1.55
	300785	AA682913	Hs.247179	ESTs; Weakly similar to KIAA0319 [H.sapiens]	1.55
	304921	AA603092		EST singleton (not in UniGene) with exon hit	1.55
35	324605	AW502851	Hs.249978	ESTs	1.55
	324473	AW501163		EST cluster (not in UniGene)	1.55
	300568	H86709	Hs.21371	son of sevenless (Drosophila) homolog 1	1.55
	314165	AA761265	Hs.221281	ESTs	1.55
	302868	AA157392		EST cluster (not in UniGene) with exon hit	1.55
40	314034	AI299137	Hs.154214	ESTs	1.55
	325389			CH.12_hs g 5866921	1.55
	331849	AA417078	Hs.193767	ESTs	1.55
	320536	AA331732	Hs.137224	ESTs	1.55
	303347	AA258033		EST cluster (not in UniGene) with exon hit	1.55
45	315769	AA744875	Hs.189413	ESTs	1.55
	317031	AA973297	Hs.126101	ESTs	1.55
	300203	AJ827065	Hs.224877	ESTs	1.55
	304037	T26438		EST singleton (not in UniGene) with exon hit	1.55
	322613	AW160507		EST cluster (not in UniGene)	1.54
50	317987	AW138174	Hs.130651	ESTs	1.54
	322313	AF086386		EST cluster (not in UniGene)	1.54
	323982	AW411383	Hs.169688	ESTs	1.54
	325303			CH.11_hs g 5866908	1.54
	312701	AI457663	Hs.128127	ESTs	1.54
55	304787	AA582678		EST singleton (not in UniGene) with exon hit	1.54
	305849	AA861571		EST singleton (not in UniGene) with exon hit	1.54
	314557	AA401367	Hs.128647	ESTs	1.54
	316507	AI381515	Hs.158381	ESTs	1.54
	315023	AA533505	Hs.185844	ESTs	1.54
60	314920	AA513406	Hs.152307	ESTs	1.54
	323097	Z44354	Hs.180950	guanine nucleotide binding protein (G protein); q polypeptide	1.54
	325043	V27919	Hs.32944	inositol polyphosphate-4-phosphatase; type I; 107kD	1.54
	307892	AI376086	Hs.158759	EST	1.54
	324573	AA491600	Hs.161942	ESTs	1.54
65	313092	AI923673	Hs.212827	ESTs	1.54
	324696	AA641092	Hs.257339	ESTs	1.54
	303019	AF098363		EST cluster (not in UniGene) with exon hit	1.54
	317158	AI459140	Hs.129109	ESTs	1.54
	309536	AW151933		EST singleton (not in UniGene) with exon hit	1.54
	301568	AI146423	Hs.146709	ESTs	1.53

	315874	AA651923	Hs.191850	ESTs	1.53
	321851	N79341		EST cluster (not in UniGene)	1.53
	310890	AI184510	Hs.143728	ESTs	1.53
	330036			CH.17_p2 gl 6042048	1.53
5	316907	AA843868	Hs.190567	ESTs	1.53
	312299	AA972712	Hs.174818	ESTs	1.53
	331128	R51361	Hs.23423	ESTs	1.53
	305177	AA663591		EST singleton (not in UniGene) with exon hit	1.53
	337685			CH22_EM:AC000097.GENSCAN.77-1	1.53
10	335290			CH22_FGENES.527_3	1.53
	308896	AI856667		EST singleton (not in UniGene) with exon hit	1.53
	307944	AI418246		EST singleton (not in UniGene) with exon hit	1.53
	300867	AW340374	Hs.121033	neural precursor cell expressed; developmentally down-regulated 1	1.53
	335320			CH22_FGENES.534_7	1.53
15	329841			CH.14_p2 gl 6672062	1.53
	317916	AI565071	Hs.159983	ESTs	1.53
	332901			CH22_FGENES.36_2	1.53
	305413	AA724659		EST singleton (not in UniGene) with exon hit	1.53
	316707	AI016387	Hs.184406	ESTs	1.53
20	313693	AW469180	Hs.170651	ESTs	1.53
	318101	AA922236	Hs.221037	ESTs	1.53
	320796	AF038966	Hs.184543	secretory carrier membrane protein 1	1.53
	307451	AI248815		EST singleton (not in UniGene) with exon hit	1.53
	323648	AI578968	Hs.152060	ESTs	1.53
25	331482	N27515	Hs.40286	ESTs	1.53
	318059	AI023175	Hs.167022	ESTs	1.53
	325958			CH.16_hs gl 5867142	1.53
	315736	AA664265	Hs.230213	ESTs	1.53
	314740	AW015867	Hs.119427	ESTs	1.52
30	314117	AA224368	Hs.185164	ESTs	1.52
	301646	AA313954		EST cluster (not in UniGene) with exon hit	1.52
	338752			CH22_EM:AC005500.GENSCAN.513-10	1.52
	309314	AW009312		EST singleton (not in UniGene) with exon hit	1.52
35	301445	AI208364	Hs.128233	ESTs; Weakly similar to REGULATOR OF CHROMOSOME CONDENSATION [H.sapiens]	1.52
	308501	AI685263	Hs.201150	EST	1.52
	312330	AA635305	Hs.121574	ESTs	1.52
	318040	AI018150	Hs.148781	ESTs	1.52
	336205			CH22_FGENES.719_10	1.52
40	325701			CH.14_hs gl 5867028	1.52
	315009	AW189460	Hs.208358	ESTs	1.52
	303121	AW407585	Hs.27769	ESTs; Weakly similar to mCAC [M.musculus]	1.52
	309271	AI986221		EST singleton (not in UniGene) with exon hit	1.52
	328385			CH.07_hs gl 5668395	1.52
45	307700	AI318545		EST singleton (not in UniGene) with exon hit	1.52
	314591	AW103292	Hs.245328	ESTs	1.52
	304484	AA432057	Hs.258373	ESTs	1.52
	304382	AA232873		EST singleton (not in UniGene) with exon hit	1.52
	304232	W52674		EST singleton (not in UniGene) with exon hit	1.52
50	309853	AW298169	Hs.57553	tousled-like kinase 2	1.52
	312504	AW207346	Hs.143202	ESTs	1.52
	313134	N63406	Hs.258697	ESTs	1.52
	330391	AF015950	Hs.115258	telomerase reverse transcriptase	1.52
	314342	AI873045	Hs.258775	ESTs	1.51
55	305977	AA887293		EST singleton (not in UniGene) with exon hit	1.51
	301165	N85789	Hs.224155	ESTs; Weakly similar to PTERIN-4-ALPHA-CARBINOLAMINE DEHYDRATASE [H.sapiens]	1.51
	300613	AI932294	Hs.249804	ESTs; Weakly similar to B-CELL LYMPHOMA 6 PROTEIN [H.sapiens]	1.51
	324124	AI554212	Hs.185664	ESTs; Weakly similar to SERINE/THREONINE-PROTEIN KINASE NRK2 [H.sapiens]	1.51
60	308037	AI458207	Hs.174181	ESTs	1.51
	323909	AL043148	Hs.186257	ESTs	1.51
	315464	AW139500	Hs.116135	ESTs	1.51
	306700	AI022056		EST singleton (not in UniGene) with exon hit	1.51
	337876			CH22_EM:AC005500.GENSCAN.107-1	1.51
65	306855	AI083982		EST singleton (not in UniGene) with exon hit	1.51
	311045	AI569399	Hs.174746	ESTs	1.51
	315010	AA531082	Hs.240049	ESTs	1.51
	310205	AW025248	Hs.202445	ESTs	1.51
	310759	AW135824	Hs.224883	ESTs	1.51

	310954	AW449044	Hs.171298	ESTs	1.51
	312019	T77048	Hs.188750	ESTs	1.51
	334773			CH22_FGENES.430_5	1.51
5	332043	AA490831	Hs.125058	ESTs	1.51
	322850	AA286219		EST cluster (not in UniGene)	1.51
	337920			CH22_EM:AC005500.GENSCAN.67-3	1.51
	328993			CH.09_hs gj 5868536	1.51
	309245	AI972447		EST singleton (not in UniGene) with exon hit	1.51
10	312172	AI222168	Hs.191168	ESTs	1.51
	304039	T47349		EST singleton (not in UniGene) with exon hit	1.5
	301329	AI149653	Hs.190496	ESTs	1.5
	313376	AI949246	Hs.200381	ESTs	1.5
	324248	AW504918		EST cluster (not in UniGene)	1.5
15	308771	AI809301		EST singleton (not in UniGene) with exon hit	1.5
	334935			CH22_FGENES.464_3	1.5
	319784	AA019827		EST cluster (not in UniGene)	1.5
	318519	T27135		EST cluster (not in UniGene)	1.5
	332807			CH22_FGENES.7_9	1.5
	322310	AF086376		EST cluster (not in UniGene)	1.5
20	324557	AA489166	Hs.156933	ESTs	1.5
	332118	AA609585	Hs.162689	EST	1.5
	319539	R09027		EST cluster (not in UniGene)	1.5
	313149	AW291092	Hs.201058	ESTs	1.5
25	329722			CH.14_p2 gj 6065785	1.5
	323514	AA861209		EST cluster (not in UniGene)	1.5
	308078	AI472621		EST singleton (not in UniGene) with exon hit	1.5
	337865			CH22_EM:AC005500.GENSCAN.100-10	1.5
	335905			CH22_FGENES.635_13	1.5

**TABLE 14A** shows the accession numbers for those primekeys lacking unigeneID's for Table 14. For each probeset we have listed the gene cluster number from which the oligonucleotides were designed. Gene clusters were compiled using sequences derived from Genbank ESTs and mRNAs. These sequences were clustered based on sequence similarity using Clustering and Alignment Tools (DoubleTwist, Oakland California). The Genbank accession numbers for sequences comprising each cluster are listed in the "Accession" column.

Pkey:	CAT number:	Accession:	Unique Eos probeset identifier number
			Gene cluster number Genbank accession numbers
Pkey	CAT number	Accession	
322064	234514_1	BE261397 Z78343 BE176419 AA383657 N90640 AA334052 AW955761 BE536232 AA374087 AA584776	
321409	197898_1	N71838 AA282003 T54072 AA761419 H92966 AI831371 AI095435 AI690247 R99331 AW964110 AA975590 AA346128	
322092	46678_1	H94196 C03864	
321452	212379_2	AF085833 R69689 AW341677 AA923375 BE327566 AW630415 R69601 AW615339	
313603	199797_1	AW962489 H64300 AA329527	
320856	36088_1	AA284333 AW468119 AA284334 AA810992	
		AB040928 T94673 AI289313 AI536039 Z44366 BE141499 D60116 D61488 D59945 AA419503 R28090 R72986 H03255	
		AI189112 AI912312 AW511018 AI401349 AW470144 C14624 AI335797 Z40300 AI014456 D60269 D60115 T16722 AI370673	
		D60270	
322139	46808_1	H53744 AF075088 H53787	
321500	552826_1	BE004271 AI248023 AI022157 H71999	
313733	441212_1	AA766346 AA809877 AA836116 AW469598 AW977404	
322215	47002_1	AF088005 N51816 N51731	
322235	47070_1	AF086106 AI193589 AW665594 N71795 AA722627 AW665373 AI300251	
321632	286374_1	AW812795 AA419617 H87827 AW299775 AW382168 AW382133 BE171659 AW392392 BE171641 AA541393	
313833	120893_1	AA766825 AA811180 AA085906 AI762946 AW977820	
322310	47376_1	AF086376 W77804 W72689 AA837735	
322313	47386_1	AF086386 W77947 W72708	
322322	47434_1	AF086431 AA886756 AI557237	
322331	47467_1	AF086467 W81444 W81445	
322345	47537_1	W85288 AF086529 AI912180 AW294159 AA58747 W94782	
322347	47545_1	AF086538 W85969 AI631911 W95835	
322370	187612_1	AA330095 W25112 AA249401	
321739	43998_1	AL080280 T73124 H02689 AL080281	
321781	1511778_1	D78667 D78871 C18258	
314570	280469_1	AA904776 AA405896 AA405962	
300129	635249_1	AW028820 AI219068	
322452	497108_2	AI147202 W56755 W56710	
321861	1651820_1	N79341 N99082 N47551	
323140	159551_1	AA180467 AA449184 AA464831 AA505048	
322520	38916_1	T55958 T57205 AF147346	
321814	85114_1	AA011603 N58604 N58611	
322571	22297_1	NM_016102 AF156271 AA781858 AW152318 AW770403 AA909463 AA482996 AA758672	
322574	39412_1	AF156548 AA639797 AI675267 AI825497 AI823355	
314753	311451_1	AA463262 AA463615 AW160405 AW407583	
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		AI277866 AA098827 AA992680 BE172624 AA424101 AA320776 AW962967 N77431 AW858960 AW858897 T85649	
		AA357743 AI827817 AI905872	
322601	577912_1	AI082395 W92924 BE048524 AW005302 AI084474 AI369330 AI827710 AW135506 AW298694	
322613	34330_1	AW160507 NM_013367 AF191338 AA384939 AI445790 AA730309 BE397003 BE267753 AI979163 N50386 AW583671	
		AW583608 BE074466 BE074479 BE074471 AW976283 AA604393 AW162122 W73648 AI823475 N75898 W73713	
		AW470099 AW513236 AW025055 AW613115 AI923379 W58081 AW664525 AW196795 AI143619 AI565152 AA025406	
		AA505846 AI685494 AA829984 N59156 N59163 R15442 AA826919 AI610221 AI200120 AA603279 AW150822 AI189513	
		AI807122 AI016368 AI335868 AW583389 AI183892 AI956157 AI628879 AW591589 AW583446 AI955406 AW148396	
		AI340255 AI867942 AA748525 AA876991 Z38516 AI874002 AI869474 N63100 AA429094 AA082443	
		AW105663 AA693880 AW517398 AI768507 BE220851 AW978538 AA831489	
		BE218300 BE327455 AL134820 R36741 R17996	
		AL031709 AI249061 AA907658 AI420444	

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		AI340452 AI612066 AW072890 AI254558 AI349884 AI370095 AI613383 AI611946 AI613353 AI307414 AI318229 AI612685
		AW305327 AW268924 AI370063 AI349292 BE049068 AI369098 AW274098 AI344845 AW075187 AI053401 AI345220
		BE138515 AI613386 AI583302 AW301955 AI349661 AI307432 AI054168 AI223913 AI612081 AI348942 AI334539 AI309366
		AI370098 AI252360 AW086316 AW268911 AW073482 AI379802 AI224284 AI053681 AI334538 AI309369 AI309688 AI310023
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		AI366995 AI223673 AW271066 AI611936 AW071296 AI270798 AI254385 AI251393 AI252562 AW268236 AI254858
		AW071317 AI309102 AI609897 AW268971 AI583267 AI792484 AW075168 BE138443 AI254126 AI309822 AI310872
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		F17185 AW614950
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	307783 697809_1	AI347274 AW844024
	301161 427238_1	AA731518 AA765714
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		AA479287 AA824634 AI638446 H54691 R96382 AA770352 AI640467 AW283491 AA778138 R28298 AA970562 C15590
25		R84455 AA020769 AI036394 H80566 BE548861 AA301207 AW959414 AI284253 AA043173 W52429 BE544571 R24852
		Z42603 F13120 R24340 R24328 T75305 H70110 N56255 AA334210 F11453 AW947285 H80345 AA288992 AW380931
		AI267175 Z45421 AW380981 W86113 AA663590 AA167577 BE566760 BE169168 AA449904 AA459205 N31126 W03564
		N31208 AW933277 N44785 AW605275 D61449 W68572 AA258190 D60496 AW992954 U46277 H04097 AA370360
		AW857211 AA159775 AI631243 H83367 H21671 D61077 AW392712 N21112 H98522 N45298 N83629 AI393509 AW022043
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	322878 117013_1	AA081820 AA082191 AA079811
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	322950 10774_1	R85652 AA114024 AA296219 AA375304 AW963796 AW885952 AW020969 AA114025 AI804930 BE350971 AI765355
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	324248 977801_1	AW504918 N55410 AL118584 AW839266
	323691 221757_1	AA317561 AI793000 AW235111 AI793178 AA767397 AI263113 AA719462

	315858 406384_1	AA737345 AA682286 AI799378
	301431 569736_1	R05385 AI061251
	324303 233842_1	AL118754 AA333202 H38001
5	324330 300543_1	AA884766 AW974271 AA592975 AAA47312
	300815 41537_2	BE152396 BE152395 AA287515 BE001834 AA286678 AW406477
	324349 1154015_1	AW501470 AW502931 AW499500
	323715 225129_1	AA322155 AA326396 AA326538
	309314 23273_3	AW009312
10	323758 229624_1	AA833858 AW978090 AA327679 AA810436
	309375 127_1	AF286598 AW075342 AB028994 AL043713 AW378914 AA340650 N57166 AW956914 R17961 AA336481 BE393734
		AW977867 AW294638 AA927857 AA961827 AW303969 AW894416 AA812119 AA912758 AA424355 AA490582 W30941
		AA476693 AA131029 AA127777 AL043714 AA496984 T51117 AA127722 AA594012 AI492876 N78483 AW119061 BE464928
		AW303419 AI972370 AI768172 AI826550 AI435432 AI379516 AA778421 AI276089 AA424521 N59381 AA723153 AA723176
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	325045 1534945_1	T08845 Z43538 F06691
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	323827 235506_1	AW406878 AW966560 AW966151 AW966496 AA336174 AA335376 AA335537
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	301618 10967_5	T52761 T52760
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		AA410577 AA193465 AW177939 AW365459 BE221693
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	324614 215437_1	AW503101 AA309184 N56323 R70988
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	324783 389615_1	AA640770 AI683112 AA913009
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		AA806708 AI744110 H24681 C16064 D62900 AI285033 AA348064 AI865123 AW467798 BE221231 AI120676 N89877
		AI928370 AI358387 AA748486 AV647478 AV647460 AA312313 AI278340 AW505099
	302552 82290_1	AA005122 H49792
	301918 316229_1	AA476777 T86049
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		N88308 AI016201 BE004662 AA291027 R57587 AA424277 AA476391 W07532 T97036 AA218898 AW162629 R57770
		W01278 W90204 W80156 AL119187 R84513 AA280103 AA334994 AW965504 AA460868 AA447470 AW138594 W38898
		W90028 AI078353 W90078 AA699696 N35523 AA704225 AA035059 AW134892 AA115140 AI142854 H90084 AA826342
		AA460694 N46339 AA425344 N56953 AA035569 AI761083 AI658696 AI524818 AI338965 AW068249 AW299871 BE464061
60		AI189720 AW340682 AI233380 AI275122 H17532 N80735 AA826343 AI039694 BE328398 AI192947 AW271286 AI623122
		AI922902 AW293087 N22141 AA730657 AW316610 N26473 F06663 Z43610 H14783 R59761 H11540 AI265915 AI681773
		AI091748 BE220636 AW841861 AI702181 AA68447 AA907544 AI273941 AW244034 R37769 AA445663 T96929 BE045884
		AA476341 H89964 H28043 AW051211 N49522 AA306977
	302696 33570_1	AK000738 AA347452 AW961713 H70832 AI750643 AA362887 AW955588 W44974 AA278599 AW298762 AA452666
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	302697 43219_1	AJ001409 AJ001410
	309917 57485_2	AW340014 AW866993 AV651649
	303347 192210_1	AA258033 AA459485
	303349 193138_1	AA382661 AW958642 AA259088
	310599 690880_1	AW300144 AI338491 AI798381 BE220076



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318455	606341_1	AI148763 AI903763 AI903753 AI903762 AI903800 AI903801
317850	363835_1	AI681545 AI951714 AI570397 AW873588 AA836396 AI359986 AI499790 AA773477 AI951615 T07547 AW304709 AF114041
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10		AA317553 H86648 H91889 AA317398 AA317378 W28024 W23034 T27877 AW950059 AA017195 R84262 AA057177
		H89941 AA019904 H84862 AA015775 AA019368 AA020976 H37800 C20733 H38682 H85197 AA018578 AA017252
		AA019440 AA059059 H38651 H84148 AA018560 W25754 C20752 AA317915 AW952115 AA317369 AA019845 R85402
		AA019482 AA017196 AA056093 AA056094 AA058836 AA056155 W25957 W23027 AA056159 W23043 W21890 W28951
		AA317978 W26459 AA317285
319127	1653640_1	N49476 Z45911 R21061
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15	303481 31534_1	AK001952 AA336839 AW249271 BE247287 AF182002 BE613472 AW962573 AA332235 AW849937 AW849814 H49893
		AA477148 AW968944 AF182003 AW007897 BE246145 W76100 AI480141 AW410205 AA609339 AI209111 AW000979
		AA330280 AW961554 W72865 H49894 AA514317 AA620407 AA504522 AW472833 AA716609 AW129282 AA347351
		AA628378 AW589860 AI636696 AA464632 AA464533 AW874189 AA757076 AA479654 AW517910 AW292357 AW872638
		AW262288 AI910666 AW513749 AW238771 AA215797 BE387073
20	303487 20890_1	BE143533 AW850432 AK000042 AA333666 AA385314 AW966616 AW783068 AW783414 AA361103 AW390841 AA040095
		AW385058 AW799162 AI383115 AI990745 AI653703 BE503893 AW150758 AI949919 AW190450 AW512348 AI825970
		AW501057 N52954 AI281378 AI401710 AI648409 AW002659 AI887639 AI093943 R33960 AA040062 AI826267 AI240425
		AI520911 AI093428 R52943
25	303488 38085_1	AI040372 AB040915 W40569 BE158910 BE158914 D63226 AW025860 AW583088 AA334307 AA210942 AW753212
		AW805322 AA362635 BE158911 AW891225 AW994862 AA805451 R28541 AA228347 N48266 AI377788 R28682 R36122
		AA811841 AI240742 AI632001 T99965 W01976 AW891205 AW891177 T97433 C15571 AA346850 AA504293 W07500
		AI694503 AA489216 AA327725 AW959917 AA694146 N68514 AI076285 AW016246 T07783 AA642400 AA716133 AA805332
		R00312 AA705021 AW498605 AW891723 AW891908 AA808025 N29039 N74897 W60393 AA810184 AI627460 AW057516
		AA807436 AA760966 AI359295 N78642 N20682 AA830300 W81705 AA832258 AW891718 AI811796 AW515523 Z41735
30		AA449978 AW891714 AI684539 AW891896 AW071701 AI890916 AI924894 AI039743 AA888524 AA242414 AI015736
		AI270105 AI865077
	303494 236389_1	F30712 F35665 AW263888 AI904014 AI904018 AA336927 AA336502
	319142 164820_1	H08370 Z46168 F07366 AA193168 AA193138
35	302868 12593_1	AK000290 AI476034 AA465309 BE148761 AW030607 AW958665 AW469635 AI819365 AI243857 AW469326 AA157110
		AA278626 AA496257 AA306656 F29732 AA831859 AA312210 AA584476 AA579065 AA769522 AA740386 AI205635
		AA491643 AA810400 AA417708 AI567332 AA157392 N53817 AA374229
		R68545 T27119 R25687 AW750672
		H13364 T27135 R61679 AA746905
40		H77679
		AB038995 NM_016530 AK001111 AA465635 AW968716 U66624 AA885459 AA703019 AI040266 AI018689 AI692886
		AI125372 AI376796 AI192040 N58161 AI133607 AW503673 AW505479 AA362265 AJ404671
	318250 244351_1	F11623 H17552 AA347728
	318644 17700_1	BE311816 AK000918 AW868037 AW868039 AF228527 AI752482 AW868041 AA077049 AI201537 W55873 AA206019
45		AA077918 AW968729 AI978828 AW139620 AI093053 AW204025 AI418805 AA589826 AA588345 AA045669 BE314455
		AA045668
	318674 204968_1	W01166 AW996900 BE184300 Z44887 T34535 R51495 AW886575 AA295490 AA295162 AA295163 AW937125 T56951
	304232 20640_2	BE386106 W52874
50	303685 8088_1	AW500106 BE241915 AW503971 NM_018542 AB040057 AA313812 AK000556 W16504 AI822088 AA259107 AA191319
		BE085957 AA309584 BE122687 AW952435 T84469 BE088194 BE088132 AA328562 BE092674 AA263102 T39634
		AW992380 R79391 R24392 H03060 AW675066 AI299952 AW020325 D25953 N75189 AA361425 AW812302 AW236333
		AW673897 AW953686 N22323 AA649166 AI377099 H03061 AI660072 AW276405 AA809779 AI803430 AW297484
		AW510384 AA814816 AA371522 D63035 AA953567 R79392 R24282 AA876831 AW297542 AI699023 AA992652 AI041436
		AI631602 AW589676 Z28684 Z24981
55	318730 275116_1	Z32887 BE349923 AA398215 AA399231
	303714 1155758_1	AW501336 AW501337
	304387 183612_1	AA236027 BE003275
	304398 10169_1	AA195509 BE394661 AV660757 AA489161 BE165972 AW503705 AA262785 AF123320 Z78357 NM_014171 AF161488
60		AA248971 BE568575 AA461410 AA165108 AI637731 H75454 AA372934 AW339334 BE568754 BE564697 BE567299
		AI681606 BE537269 AW197204 AA290890 AI189393 AW292463 AW470227 F27399 AW611942 BE566888 AW301701
		AI675761 AI628429 AA164711 AI797753 AI656879 AI912690 AI675277 AI695099 AI094095 AW014158 BE091059 AI201748
		AW236961 AI038003 AI083506 AA401608 AI079405 AI073516 AI655537 AA401475 AI814532 AI079852 AI093789 AI422084
		AI216476 AI392760 AA926998 AA781782 Z25198 AI086377 AI185511 AI185539 Z28843 AI223792 AI379563 AA706253
		AI433788 AI921885 H75455 AW025269 AI224100 AI083611 AI225057 AW196334 AI572254 AA761628 AI472801 AA283784
		AA830149 AW978407 M85983 AW503637
65	303751 468554_1	W00973 N56457 AW992226 T84921 R01342
	319401 1323199_1	R86913 R86901 H25352 R01370 H43764 AW044451 W21298
	319402 1003489_1	F08434 Z42573 H28810
	318807 1536467_1	AI524124 R06841 R06842
	319478 765461_1	Z43108 F06295 R13085
	318872 1534581_1	

	318885 94880_2	AA742899 Z43272 AA345258 AW956677 AA031942
	303841 79133_1	W19657 BE616760 BE259848 BE382680 BE615587 AI934464 AA322745 T07155 AW961174 AA307302 Z41888 AA621992
		AA188400 AW770608 AI147458 AI148408 AI696291 AA972591
5	303889 1777183_1	T19204 T36109 T36107
	319539 63198_1	R09027 AA344892 AA328574 AW955848 AW978708 AI567804 AI378935 AW014657 AI804134 R08922 N92947 BE546788
	318905 1536408_1	F08365 Z43395 R54298
	320187 396254_1	T99949 AA654769 AA664550 AW975264
	318996 65715_1	Z44268 H06384 AV655948
10	319635 163534_1	R17531 AW960899 AA338366 AW673294 BE047729 BE047722 AA330746 AW841797 H05030 AI142105 R12654
	319699 747196_1	AI458682 H24240 R14537 R18426 AW867082
	319713 1699356_1	R24204 R15712 T84695
	319761 75324_2	AW630974 BE005208 R84237 AA724997 AA334867 AW955777 R18816
	319764 88596_1	AA019827 R18947 H46852
	319808 7069_3	T58960 AA609180 AA621130 AI927236 AA431075
15	321040 193331_1	AA261830 AW967855 H26953 AA262478
	320409 43709_1	AA226869 AA296516 AW959753 AA186390 AL359619 AA356195 AA148427 R22748 AI033624 BE548853 H95327
		AW579751 BE561648 AA397533 BE617136 AA236444 T89946 AA247450 N55777 W38725 AI743846 AI808406 AA922229
		AI051464 W04713 R11251 W19856 AI042319 AA489276 AI224533 H95274 AW269958 T89311 AI890088 AI862754
20		AI830968 AI669336 AI589780 AA534557 AW273839 AI338155 AI126632 N83542 BE046048 AA807028 AA848107
		AW167978 AA976930 AA148428 AI289304 AI524262 AI625961 AA773469 AI222288 AI280054 AI242371 AA227222
		AA973329 AA296517 AA829436 AA234526 AI149769 AI567865 AA936939 AI590681 AW469308 AI689531 AA486419
		AA22051 AI057252 AA626941 AI475352 AW247913 AI222370 AA670122 AW198034 AA486418 AI363794 AA380739
	319881 1585983_1	H51299 H44619 H46391 R86024 H51892 T72744
25	320488 368456_1	AI817336 R32883 AA595590 AI743065 R31386
	321121 1545647_1	W23285 H42714 F25381 F37215
	321205 81249_1	AA002047 N72537 H54142 H81580
	321253 375160_1	AA610649 AI699484 H59558
	314043 155125_1	AA827082 AA732246 AA167611 AA830741
30	320630 17685_2	AA199847 AA410224 R53323 AW936567 AW936568 AW936571
	313435 443527_1	AA769123 AA831715 AW977666 W92553
	313443 82292_1	AA005125 W85019 W93335 AA249037
	313472 82811_1	AA007374 AA007466 AI816886
	321348 41762_1	Z49979 D61703 U30168
35	314138 179960_1	AA740616 AA654854 AA228923
	320712 57156_2	R66867 R65678 R82673 W73128 R83101
	321383 41924_1	AW968556 AJ238555 AW968731 AJ002574 AA459446 H70260 AW977557 AA767351 AW268572 AA810719 AI698677
		AI300460 AA907450 AA649224 T07415 AI536896 BE018515 AI279865 BE047421
	312996 187327_1	AW368634 AI702169 AI245179 AW368646 BE545574 AA249018 AW368633 N27553
40	306513	AA989230
	306537	AA991705
	306557	AA994530
	306598	AI000320
	306620	AI000929
	306700	AI022058
45	308078	AI472621
	306813	AI068544
	306830	AI075803
	306855	AI083962
50	329722 c14_p2	
	329728 c14_p2	
	306890	AI092235
	308100	AI475949
	308147	AI498991
55	306929	AI124514
	308352	AI610791
	308383	AI624497
	308521	AI689808
	308561	AI701559
	308617	AI738720
60	308771	AI809301
	308828	AI824829
	308896	AI858667
	303019 41850_1	AF098363 AF098365
	303084 44211_1	AF174008 AF174027 AF174106
65	305092 AA642912	
	305169	AA663131
	305177	AA663591
	305235	AA670480
	305413	AA724659

	305849	AA861571
	305854	AA862733
	307113	AI183688
	307130	AI185234
5	305937	AA883238
	305977	AA887293
	307451	AI248615
	307513	AI274307
10	307848	AI364186
	307871	AI368665
	307881	AI370434
	307832	AJ230822
	307944	AI418246
	307954	AI419692
15	307965	AI421641
	308245	AI972447
	308271	AI986221
	309365	AW072861
	308372	AW074330
20	308435	AW090537
	309506	AW137700
	308536	AW151933
	309709	AW242630
25	325417 c12_hs	
	325450 c12_hs	
	325452 c12_hs	
	309815	AW292760
	309839	AW296076
	309849	AW297444
30	309906	AW339340
	302705 31765_1	U09060 U09061
	304037	T26438
	304039	T47349
	304236	W83278
35	304257	AA053284
	304382	AA232873
	304405	AA282572
	304561	AA489792
	304569	AA490834
40	304787	AA582678
	304921	AA603092
	327819 c_5_hs	
	304968	AA614308
	306382	AA668967
45	331263 47479_1	AW780182 AA015718 W02571
	332252 1663967_1	N63882 T91174

**TABLE 14B** shows the genomic positioning for those primekeys lacking unigene ID's and accession numbers in Table 14. For each predicted exon, we have listed the genomic sequence source used for prediction. Nucleotide locations of each predicted exon are also listed.

10 Pkey: Unique number corresponding to an Eos probaset  
 Ref: Sequence source. The 7 digit numbers in this column are Genbank Identifier (GI) numbers  
 Strand: Indicates DNA strand from which exons were predicted.  
 Nt\_position: Indicates nucleotide positions of predicted exons.

15	Pkey	Ref	Strand	Nt_position
	332807	Dunham, I. et al.	Plus	297686-297808
	332808	Dunham, I. et al.	Plus	298277-298360
	332812	Dunham, I. et al.	Plus	309688-310561
	332901	Dunham, I. et al.	Plus	1841954-1842090
20	333149	Dunham, I. et al.	Plus	3574317-3574413
	333916	Dunham, I. et al.	Plus	8298994-8299169
	334026	Dunham, I. et al.	Plus	9196549-9196681
	334061	Dunham, I. et al.	Plus	9688941-9687077
	334073	Dunham, I. et al.	Plus	9792201-9792374
25	334150	Dunham, I. et al.	Plus	10529221-10529854
	334379	Dunham, I. et al.	Plus	13908356-13908467
	334719	Dunham, I. et al.	Plus	15778859-15779026
	334773	Dunham, I. et al.	Plus	16235169-16235328
	334893	Dunham, I. et al.	Plus	19302753-19302881
30	334935	Dunham, I. et al.	Plus	20108247-20108373
	335146	Dunham, I. et al.	Plus	21491292-21491457
	335320	Dunham, I. et al.	Plus	22542132-22542246
	335568	Dunham, I. et al.	Plus	24935021-24935655
	335586	Dunham, I. et al.	Plus	24990333-24990497
35	335601	Dunham, I. et al.	Plus	25044923-25045157
	336036	Dunham, I. et al.	Plus	28019795-28019877
	336123	Dunham, I. et al.	Plus	30051089-30051186
	336268	Dunham, I. et al.	Plus	31997555-31998040
	337173	Dunham, I. et al.	Plus	23624127-23624224
40	337480	Dunham, I. et al.	Plus	32536159-32536395
	337685	Dunham, I. et al.	Plus	3547161-3547245
	337736	Dunham, I. et al.	Plus	3850500-3850643
	337780	Dunham, I. et al.	Plus	4113793-4113880
	337965	Dunham, I. et al.	Plus	7034267-7034392
45	337976	Dunham, I. et al.	Plus	7186011-7186119
	338030	Dunham, I. et al.	Plus	8072708-8072827
	338112	Dunham, I. et al.	Plus	10391398-10391600
	338165	Dunham, I. et al.	Plus	12205719-12205875
	338178	Dunham, I. et al.	Plus	12800037-12800181
50	338427	Dunham, I. et al.	Plus	19685043-19685354
	338506	Dunham, I. et al.	Plus	21221871-21221953
	338794	Dunham, I. et al.	Plus	27114697-27114763
	338910	Dunham, I. et al.	Plus	28795375-28795551
	339047	Dunham, I. et al.	Plus	30760783-30760968
55	332864	Dunham, I. et al.	Minus	1390386-1390296
	332933	Dunham, I. et al.	Minus	2035790-2035681
	333193	Dunham, I. et al.	Minus	3832993-3832494
	333712	Dunham, I. et al.	Minus	7286177-7286073
	333940	Dunham, I. et al.	Minus	8523830-8523671
60	333942	Dunham, I. et al.	Minus	8552629-8552330
	334287	Dunham, I. et al.	Minus	13294116-13293871
	334387	Dunham, I. et al.	Minus	13946021-13945781
	334487	Dunham, I. et al.	Minus	14432191-14432132
	334913	Dunham, I. et al.	Minus	19463909-19463815
65	335109	Dunham, I. et al.	Minus	21325782-21325667
	335250	Dunham, I. et al.	Minus	21952922-21952826

	335288	Dunham, I. et.al.	Minus	22304275-22303770
	335290	Dunham, I. et.al.	Minus	22309950-22309891
	335549	Dunham, I. et.al.	Minus	24666203-24666128
5	335862	Dunham, I. et.al.	Minus	26690300-26690125
	335864	Dunham, I. et.al.	Minus	26694537-26694382
	335906	Dunham, I. et.al.	Minus	26888888-26888719
	336205	Dunham, I. et.al.	Minus	30477456-30477311
	336276	Dunham, I. et.al.	Minus	32093320-32093181
10	336433	Dunham, I. et.al.	Minus	34067540-34067425
	336605	Dunham, I. et.al.	Minus	15616509-15616358
	336616	Dunham, I. et.al.	Minus	26021027-26020848
	336679	Dunham, I. et.al.	Minus	2035780-2035681
	337043	Dunham, I. et.al.	Minus	17407330-17407251
	337272	Dunham, I. et.al.	Minus	28241476-28241307
15	337357	Dunham, I. et.al.	Minus	30906179-30906109
	337393	Dunham, I. et.al.	Minus	31471747-31471569
	337497	Dunham, I. et.al.	Minus	33371317-33371258
	337646	Dunham, I. et.al.	Minus	2648689-2648632
	337820	Dunham, I. et.al.	Minus	6051648-6051510
20	338083	Dunham, I. et.al.	Minus	9318438-9318301
	338220	Dunham, I. et.al.	Minus	14166440-14166104
	338752	Dunham, I. et.al.	Minus	26421374-26421135
	338763	Dunham, I. et.al.	Minus	26628148-26628009
	338983	Dunham, I. et.al.	Minus	29908865-29908702
25	339209	Dunham, I. et.al.	Minus	32492953-32492593
	325240	5866848	Minus	32301-32650
	329532	3983505	Plus	42937-43014
	329522	3983507	Minus	35265-35458
	329519	3983510	Plus	18407-18597
30	329511	3983514	Plus	20965-21325
	325326	5866875	Plus	47726-48024
	325303	5866908	Minus	73556-73630
	325389	5866921	Plus	239672-239759
	325417	5866925	Minus	110635-110745
35	325450	5866941	Minus	435379-435552
	325452	5866941	Minus	704103-704202
	325498	5866967	Plus	173372-173930
	325587	6682462	Plus	126724-126967
	325602	5866994	Plus	79122-79251
40	325701	5867028	Minus	72936-73046
	325780	6381953	Plus	63634-63873
	329722	6065785	Minus	112713-112992
	329728	6065785	Minus	207544-207741
	329668	6272129	Plus	98307-98446
45	329815	6624888	Minus	68431-68720
	329841	6672062	Minus	40181-40331
	325824	5867048	Minus	42450-42833
	325866	5867076	Minus	94358-94628
	325902	5867101	Minus	127729-127842
50	325958	5867142	Plus	53437-53550
	326014	5867160	Minus	10358-10447
	329941	6165199	Minus	34319-34411
	330002	6623963	Plus	46097-46158
	326154	5867170	Minus	7103-7179
55	326023	5867245	Plus	171799-171896
	326278	5867269	Plus	75250-75903
	330036	6042048	Plus	117120-117216
	326547	5867307	Minus	623677-623870
	326495	5867423	Plus	11843-11930
60	326507	5867435	Minus	13038-13111
	326505	5867435	Minus	8818-8949
	326506	5867435	Minus	9368-9509
	326530	5867441	Minus	303000-303122
	326508	6682496	Plus	78904-79112
65	330120	6671864	Minus	127553-127656
	330123	6671869	Minus	35311-35408
	326858	6552462	Minus	69337-69670
	326983	5867657	Minus	16023-16581
	327014	5867664	Plus	1017630-1017788

	326930	6456782	Plus	606950-607705
	326920	6456782	Minus	42425-42519
	327058	6531965	Plus	2384268-2384835
5	327061	6531965	Minus	3486389-3486673
	327075	6531965	Plus	4041318-4041431
	327120	6531970	Minus	6-1088
	330126	6093735	Plus	82458-82623
	327157	5866841	Minus	4408-4746
10	327183	5867442	Plus	84317-84531
	327182	5867445	Minus	194652-194764
	327288	5867481	Plus	48583-48773
	327469	5867772	Plus	145549-145708
	327489	6004459	Minus	57796-58015
	327528	6381882	Minus	97010-97123
15	327574	5867818	Plus	68767-69126
	327665	5867839	Plus	141736-141800
	327762	5867949	Plus	93721-94421
	327819	5867968	Minus	92202-92717
	327798	5867982	Plus	85267-85405
20	330260	6671884	Plus	45203-45269
	330282	6671910	Plus	3982-4114
	328078	5868008	Plus	72807-72865
	328121	5868031	Plus	153782-153850
	328190	5868077	Plus	21082-21165
25	328227	5868105	Minus	21082-21242
	327871	5868131	Minus	88889-89221
	328018	5902482	Minus	542547-543133
	328624	5868246	Minus	120666-120836
	328744	5868290	Plus	138639-138722
30	328799	5868316	Minus	80771-80923
	328291	5868363	Minus	144244-144434
	328329	5868375	Plus	191709-192239
	328369	5868388	Plus	75371-75583
35	328385	5868395	Plus	369952-370155
	328397	5868397	Plus	344967-345063
	328412	5868405	Plus	88427-86519
	328538	5868485	Plus	3814-4243
	328656	6004473	Plus	792616-792729
40	328638	6004473	Plus	294618-294903
	328903	5868514	Plus	23625-24468
	328960	6456775	Plus	38547-38837
	330320	5932415	Minus	54458-54697
	328993	5868536	Plus	49160-50084
	329081	5868602	Plus	93368-93510
45	329089	5868614	Plus	25805-26923
	329109	5868626	Plus	102168-102273
	329182	5868716	Plus	166936-167020
	329218	5868726	Minus	71408-71707
	329224	5868728	Plus	27422-27664
50	329246	5868732	Minus	250541-250782
	329415	5868874	Plus	1011438-1011818
	329454	5868887	Plus	51342-51593

**TABLE 15: 169 GENES WITH SEQUENCE INFORMATION DEPICTED IN TABLE 16**

Table 15 depicts UnigeneID, UnigeneTitle, Primekey, Predicted Cellular Localization, and Exemplar Accession for all of the sequences in Table 16. The information in Table 15 is linked by EosCode to Table 16.

	Pkey:	Unique Eos probeset identifier number				
	ExAccn:	Exemplar Accession number, Genbank accession number				
	UnigeneID:	Unigene number				
	Unigene Title:	Unigene gene title				
	EosCode:	Internal Eos name				
	Localization:	Predicted cellular localization of gene product				
15	Pkey	ExAccn	UnigeneID	Unigene Title	EosCode	Localization
20	100394	D84276	Hs.66052	CD38 antigen (p45)	PBC1	plasma membrane
	100452	D87742	Hs.241552	KIAA0268 protein	PAB7	not determined
	101249	L33881	Hs.1904	protein kinase C, iota	OAA1	cytoplasmic
	101485	M24736		selectin E (endothelial adhesion molecule	ACC5	plasma membrane
	101514	M28214	Hs.123072	RAB3B, member RAS oncogene family	PFJ2	cytoplasmic
	101851	M94250	Hs.82045	midkine (neurite growth-promoting factor	LBH9	secreted
	102398	U42359		gbHuman N33 protein form 1 (N33) gene,	PDG3	
	102522	U53347	Hs.183556	solute carrier family 1 (neutral amino a	PFJ4	plasma membrane
	102669	U71207	Hs.29279	eyes absent (Drosophila) homolog 2	LEM9	cytoplasmic
	103119	X63629	Hs.2877	cadherin 3, type 1, P-cadherin (placenta	LBG2	plasma membrane
30	103709	AA037316	Hs.13804	hypothetical protein dJ462023.2	PDO6	
	104080	AA402971	Hs.57771	kallikrein 11	PBA6	secreted
	104144	AA447439	Hs.183390	hypothetical protein FLJ13590	PDM3	
	104691	AA011176	Hs.37744	Homo sapiens beta-1 adrenergic receptor	PAV1	plasma membrane
	105370	AA236476	Hs.22791	transmembrane protein with EGF-like and	PDM9	plasma membrane
	106149	AA424881	Hs.256301	hypothetical protein MGC13170	PDO8	
	106579	AA456135	Hs.23023	ESTs	PAA4	plasma membrane
	107102	AA609723	Hs.30652	KIAA1344 protein	PAA3	not determined
	107217	D51095		DKFZP586E1621 protein	PDG8	
	108153	AA054237	Hs.40808	ESTs	PBF1	plasma membrane
40	109014	AA156790	Hs.282036	ESTs, Weakly similar to Z223_HUMAN ZINC	PDG7	
	109112	AA169379	Hs.257924	hypothetical protein FLJ13782	BCU4	not determined
	109890	H04649	Hs.20843	Homo sapiens cDNA FLJ11245 fis, clone PL	PDG4	
	110151	H18836	Hs.31608	hypothetical protein FLJ20041	PAV9	plasma membrane
	112971	T17185	Hs.83883	transmembrane, prostate androgen induced	CHA1	not determined
	113021	T23855	Hs.129836	KIAA1028 protein	PDO3	
	114908	AA236545	Hs.54973	cadherin-like protein VR20	PFJ6	plasma membrane
	114965	AA250737	Hs.72472	ESTs	BCY2	mitochondrial
	116393	AA599463		hypothetical protein MGC2648	PDV3	secreted
	116416	AA609219	Hs.39982	ESTs	OAB6	
50	117698	N41002	Hs.45107	ESTs	PDT9	ER
	117984	N51919	Hs.106778	ATPase, Ca++ transporting, type 2C, memb	PAJ5	not determined
	118985	N94303	Hs.55028	ESTs, Weakly similar to I54374 gene NF2	PDM8	
	119018	N95796	Hs.278695	Homo sapiens prostelin mRNA, complete cds		-PAB2 plasma membrane
	119126	R45175	Hs.117183	ESTs	PBF8	
	120992	AA398246	Hs.87594	KIAA1210 protein	PDG5	
	121710	AA419011		prostate androgen-regulated transcript 1	PDV5	
	121913	AA428082		ESTs; protease inhibitor 15 (PI15)	BCU7	vesicular
	122041	AA431407	Hs.98732	Homo sapiens Chromosome 16 BAC clone CIT		PAZ1 not determined
	122593	AA453310	Hs.128749	alpha-methylacyl-CoA racemase	PDO1	
60	123209	AA489711	Hs.203270	ESTs, Weakly similar to ALU1_HUMAN ALU S		PAA2 plasma membrane
	124526	N62096	Hs.293185	ESTs, Weakly similar to JC7328 amino acid	PAV4	plasma membrane
	126399	AA128075		transmembrane, prostate androgen induced	PDY4	
	126845	A167942	Hs.61635	six transmembrane epithelial antigen of	PAA5	plasma membrane
	126966	R38438	Hs.182575	solute carrier family 15 (H+/peptide tra	PDO5	plasma membrane
	127637	AA569531	Hs.162859	ESTs	PAA6	not determined
	128790	AA291725	Hs.105700	secreted frizzled-related protein 4	BCX2	secreted
	129109	AA491295	Hs.108708	calcium/calmodulin-dependent protein kin	PFJ7	
	129184	W26769	Hs.109201	CGI-86 protein	PAV6	vesicular
	129389	AA621604		spodin 2, extracellular matrix protein	CJA5	not determined

	129404	AA172056		ESTs	PAB4	
	129534	R73540	Hs.11260	hypothetical protein FLJ11264	PAJ3	secreted
	130760	AA128997	Hs.18953	phosphodiesterase 9A	PEE8	nuclear
5	131425	AA219134	Hs.26691	ESTs	PBA7	
	132984	AA031360		ESTs	PAA7	plasma membrane
	132967	AA032221	Hs.61635	sbx transmembrane epithelial antigen of	PM17	plasma membrane
	133179	U81599	Hs.66731	homeo box B13	PFJ5	nuclear
	133330	U42360	Hs.71119	Putative prostate cancer tumor suppressor	PDM1	plasma membrane
10	133520	X74331	Hs.74519	primase, polypeptide 2A (58kD)	PDM2	
	133724	U07919	Hs.75746	aldehyde dehydrogenase 1 family, member		PDT1 mitochondrial
	133724	U07919	Hs.75746	aldehyde dehydrogenase 1 family, member		PDT1 mitochondrial
	133944	AA045870	Hs.7780	Homo sapiens mRNA; cDNA DKFZp564A072 (fr		PAB9 cytoplasmic
	134110	U41060	Hs.79136	LIV-1 protein, estrogen regulated	BCR4	plasma membrane
	301805	AI800004	Hs.142846	hypothetical protein	PEU4	nuclear
15	302005	AI869666	Hs.123119	MAD (mothers against decapentaplegic, Dr	PBJ6	cytoplasmic
	302881	AA508353	Hs.105314	relaxin 1 (H1)	PBH3	secreted
	303506	AA340605	Hs.105887	ESTs, Weakly similar to Homolog of rat Z	PEG4	
	303699	D30891	Hs.18525	hypothetical protein FLJ22794	PBM4	not determined
	303753	AW503733	Hs.8414	KIAA1488 protein	PBY3	not determined
20	308050	AI460004	Hs.31608	hypothetical protein FLJ20041	PEU5	plasma membrane
	310382	AI734009	Hs.127699	KIAA1603 protein	PCQ8	
	310431	AI420227	Hs.149358	ESTs, Weakly similar to A46010 X-linked	PBH1	plasma membrane
	310573	AW292180	Hs.156142	ESTs	PEN3	plasma membrane
	310598	AI338013	Hs.140546	ESTs	PCW3	
25	310816	AI973051	Hs.224965	ESTs	PET5	
	311586	AI682088	Hs.78375	holocarboxylase synthetase (biotin-prop	PBH8	
	313676	AA861697	Hs.120591	ESTs	PBY2	
	314121	AI732100	Hs.187619	ESTs	PBY1	
	314691	AW207206	Hs.136319	ESTs	BFF8	not determined
30	314785	AI538226	Hs.32976	guanine nucleotide binding protein 4	CBO7	cytoplasmic
	314907	AI672225	Hs.222886	ESTs, Weakly similar to TRHY_HUMAN TRICH	PBM2	not determined
	315051	AW292425		ESTs	PBM9	
	315052	AA878910	Hs.134427	ESTs	PBJ7	plasma membrane
	316442	AA760894	Hs.153023	ESTs	PBJ9	
35	317548	AI654187	Hs.185704	ESTs	PBQ6	
	317869	AW285184	Hs.129142	deoxyribonuclease II beta	PBQ7	
	318524	AW291511	Hs.159066	hypothetical protein FLJ10188	PBJ1	cytoplasmic
	319191	AF071538		prostate epithelium-specific Ets transcr	PEN1	
	319763	AA460775	Hs.6295	ESTs, Weakly similar to T17248 hypotheti	PEO7	
40	320324	AF071202	Hs.139336	ATP-binding cassette, sub-family C (CFTR	PBH5	plasma membrane
	320561	NM_006953	Hs.159330	uroplakin 3	PEL9	plasma membrane
	320796	AF038966	Hs.31218	secretory carrier membrane protein 1	PBY4	not determined
	321441	AW297633	Hs.118498	Homo sapiens LUCA-15 protein mRNA, splic	PBY8	not determined
	322303	W07459	Hs.157601	ESTs	CBF9	secreted
45	322782	AA056060	Hs.202577	Homo sapiens cDNA FLJ12168 fis, clone MA		PBQ1 not determined
	322818	AW043782	Hs.293618	ESTs	PCQ7	plasma membrane
	323226	AF055019	Hs.21906	Homo sapiens clone 24670 mRNA sequence		PC12 not determined
	323287	AA639902	Hs.104215	ESTs, Moderately similar to SPCN_HUMAN S	PBJ5	
	324295	AI146686	Hs.143691	ESTs	PBQ9	not determined
50	324430	AA464018	Hs.184598	Homo sapiens cDNA: FLJ23241 fis, clone C		PBY6 not determined
	324603	AW016378	Hs.292934	ESTs	PBM3	
	324617	AA508552	Hs.195839	ESTs, Weakly similar to I38022 hypotheti	PBH4	cytoplasmic
	324626	AI685464		gb:tt88104.x1 NCI_CGAP_Pr28 Homo sapiens		PCW6
	324658	AI694767	Hs.129179	Homo sapiens cDNA FLJ13581 fis, clone PL		PBJ4 plasma membrane
55	324718	AI557019	Hs.118467	small nuclear protein PRAC	CBK1	nuclear
	330211				PBJ2	not determined
	330546	U31382	Hs.299867	guanine nucleotide binding protein 4	PEW1	cytoplasmic
	330762	AA449677	Hs.15251	hypothetical protein	PBM1	not determined
	330790	T48536	Hs.122764	TMPRSS2, transmembrane protease, serine		PEL3 plasma membrane
60	330892	AA149579	Hs.91202	ESTs	PBQ4	plasma membrane
	331099	R36871	Hs.14846	Homo sapiens mRNA; cDNA DKFZp564D016 (fr		PCQ1 cytoplasmic
	331490	N32912	Hs.291039	ESTs	PC14	nuclear
	331889	AA431407	Hs.98802	ESTs, Moderately similar to T14342 NSD1	PBH7	not determined
	332247	N58172		gb:za21f09.s1 Soares fetal liver spleen	PBQ5	nuclear
65	332396	AA340504		gb:hw31a09.x1 NCI_CGAP_Kid11 Homo sapien		PBJ8 not determined
	332697	T94885		transgelin 2	PBQ8	secreted
	332798				PBH2	nuclear
	334447				PBY9	not determined
	338255				PBY7	not determined



	401424			PFG2	mitochondrial
	407122	H20276	Hs.31742	ESTs	PEW7
	408430	S79876	Hs.44926	dipeptidylpeptidase IV (CD26, adenosine	PEZ3
	408826	AF216077	Hs.48376	Homo sapiens clone HB-2 mRNA sequence	PEY1
5	409262	AK000631	Hs.52256	hypothetical protein FLJ20624	PFG1
	409361	NM_005982	Hs.54416	sine oculis homeobox (Drosophila) homolog	PEW3
	411096	U80034	Hs.68583	mitochondrial intermediate peptidase	PEZ9
	413125	BE244589	Hs.75207	glyoxalase I	PFG3
	413623	AA825721	Hs.246973	ESTs	OBH6
10	414422	AA147224	Hs.337232	Homeo box A13	PFC6
	415263	AA948033	Hs.130853	ESTs	PEZ5
	417153	X57010	Hs.81343	*collagen, type II, alpha 1 (primary ost	PFJ1
	418601	AA279490	Hs.86368	calmagin	PFA1
	418848	AJ820991	Hs.183465	ESTs	PEY4
15	418892	NM_004996	Hs.89433	ATP-binding cassette, sub-family C (CFTR	OBH2
	418939	U24577	Hs.93304	*phospholipase A2, group VII (platelet-a	PFH9
	421887	AW161450	Hs.109201	CGI-86 protein	PFH2
	422083	NM_001141	Hs.111256	*arachidonate 15-lipoxygenase, second ty	PFH5
	424565	AW102723	Hs.75295	guanylate cyclase 1, soluble, alpha 3	PFA3
20	425071	NM_013989	Hs.154424	*deiodinase, iodothyronine, type II	PFH6
	425710	AF030880		solute carrier family, member 4	PFD4
	427958	AA418000	Hs.98280	potassium intermediate/small conductance	PFH1
	428819	AL135623	Hs.193914	KIAA0575 gene product	PFD6
	428900	AA460421	Hs.30875	ESTs	PEZ7
25	428918	AW873986	Hs.119383	ESTs	PEY5
	430226	BE245562	Hs.2551	adrenergic, beta-2-, receptor, surface	PEZ4
	431217	NM_013427	Hs.250830	Rho GTPase activating protein 6	PFG6
	431716	D89053	Hs.268012	fatty acid-Coenzyme A ligase, long-chain	PEZ1
	431992	NM_002742	Hs.2891	protein kinase C, mu	PFH4
30	432189	AA527941		gbmh30c04.s1 NCI_CGAP_Pr3 Homo sapiens	PFA2
	432244	AJ669973	Hs.200574	ESTs	PEW8
	432437	W07088	Hs.293685	ESTs	PFG3
	432966	AA650114	Hs.325198	ESTs	PEY3
	439176	AJ446444	Hs.190394	ESTs, Weakly similar to B28096 line-1 pr	PEW5
35	440260	AJ972867	Hs.7130	copine IV	PEW6
	440901	AA909358	Hs.128612	ESTs	PFC8
	445424	AB028945		cortactin SH3 domain-binding protein	PEZ6
	446320	AF126245	Hs.14791	*acyl-Coenzyme A dehydrogenase family, m	PFH7
	447210	AF035269		phosphatidylserine-specific phospholipas	PFH8
40	449156	AF103907	Hs.171353	prostate cancer antigen 3, non-coding DD	PEZ8
	449625	NM_014253		odx (odd Oz/ten-m, Drosophila) homolog 1	PEZ2
	449650	AF055575	Hs.23838	calcium channel, voltage-dependent, L ty	PFD2
	451939	U80456	Hs.27311	single-minded (Drosophila) homolog 2	PFJ8
	451982	F13036	Hs.27373	Homo sapiens mRNA; cDNA DKFZp564O1763 (f	PFG9
45	452039	AJ922988		ESTs	PFD8
	452340	NM_002202	Hs.505	ISL1 transcription factor, LIM/homeodoma	PFG4
	452784	BE463857	Hs.151258	hypothetical protein FLJ21062	PFC5
	452946	X95425	Hs.31092	EphA5	PFH3

**TABLE 15A** shows the accession numbers for those primekeys lacking a unigeneID in Table 15. For each probeset we have listed the gene cluster number from which the oligonucleotides were designed. Gene clusters were compiled using sequences derived from Genbank ESTs and mRNAs. These sequences were clustered based on sequence similarity using Clustering and Alignment Tools (DoubleTwist, Oakland California). The Genbank accession numbers for sequences comprising each cluster are listed in the "Accession" column.

Pkey:	Unique Eos probeset identifier number	
CAT number:	Gene cluster number	
Accession:	Genbank accession numbers	
Pkey	CAT number	Accession
116393	131543_1	AI972402 AI634409 AI523716 AI799749 W44518 AI424438 AI688513 AI971048 AI688324 AW013854 AA588483 AA528111 AI627428 AI582200 AI669296 AI826926 AI820526 AI669858 AI972458 AI924500 AA512903 W44517 AA335363 AW238997 BE300165 BE250665 AA284185 AA523420 W52834 AI471970 AI952824 AW003820 AW009483 AA669796 AA114966 AI653342 AA115038 AI342150 AI092100 AI968211 W51994 AI804005 AI201420 AI123210 AI738405 AI674964 AI970341 AW027500 AI493316 AI333193 AI139353 AA599463 AI656163 AI804200 AI365321 AI990213 AI657011 AA650025 AI968810 AI341978 AA599839 AW592602 AA644289 AI468578 AI565265 AI565228 BE221535 AW973052 AA296520 AL021940 M30640 NM_000450 M24738 M61894 AL047443 H39560 AI694691 AA916787 AI214796 AA939085 AI150616 AA412553 AA412545 AI051015 T27654 AA694430
101485	18113_1	AA088767 AF224278 AA128075 AL035541 AA027926 AI761441 AI972096 AW071693 AI742327 AI377498 AI804815 AI640802 AI885001 AI921394 AA595115 N71820 AI921217 AW007283 AI467828 AI369306 AA917446 AI493698 AA088701 AA126889 AI936228 AW204238 AI039567 AI925027 BE138909 AW452945 AW135998 AA310984 AA027860 AW073519 AI537597 AA953976 AI521341 AW273569 AW050740 AA536113 AA559064 AI474392 AW135709 AA535181 AW572959 AA570597 AI905464 AI677810 AI587642 AW975102 AA424310 AA482527 N64192 AA658276 AW889117 AA486591 AW889172 AI381990 AI381891 AI673419 AI990950 AA487031 AI272934 AI150565 AA229168 AW316722 AI142707 BE222398 AA614168 AA122026 AW338227 AA632457 AI988726 AW369662 AA512956 AA541675 AA451748 AI250993 BE146418 AA122025
126399	17331_1	AI362575 AI805082 AW263421 AI432462 AA135870 AA031360 AA031604 AA298475 AA298464 NM_012445 AB027468 BE407510 BE047605 AA047125 AW084003 AA149494 AA149490 AA292528 AA570505 AA526186 AW006250 AW007762 AI341557 AI799666 AI972710 AI377966 AI962810 AI084783 AI458032 AI190971 AW148913 AA372354 AW970032 AW007426 AA650188 AI123203 AI122890 AI280975 W73595 W73495 AI863238 AA374109 AA603986 AW149089 AW957523 AI307748 AI921067 AI338483 F24537 AI380460 AI387500 AI189309 AI814701 AI766821 AW572106 AA037024 AW072576 AA578293 AI288103 AA235484 AW450642 AA574230 AW294024 AI589229 AI580733 AW512227 AA877009 AI660255 AW188597 AA558228 AI572782 AA658397 AI274628 AI866359 AA864573 AI264439 AA621604 AW515493 AW243333 Z39737 AI567038 AA573997 AA573559 AW236431 AI652870 AI684973 AA034505 AA047126
132984	94346_1	AI267700 AI720344 AA191424 AI023543 AI469633 AA172056 AW958465 AA172238 AW953397 AA355086
129389	21074_1	AL080235 AA031750 D81382 AI480231 AI095947 AI660953 BE010721 AI870280 AA374945 AA125792 D51527 D51556 AI685541 D51559 AW117286 AA195741 AI675138 AW593439 AI201885 T30590 AW952100 D51095 AA523864 W70043 AA987586 AI421515 AI205532 AA127069 AI337367 D51595 AI453785 AW075677 AW088359 C14287 C14284
121710	19266_1	AF163474 NM_016590 AF163475 AI761105 AI770098 AA410580 AA411616 AI590343 AI739050 AL050198 AI862645 AA419104 AA513809 AA333032 AI816915 AW139625 AA640889 AI311391 AI627693 AW135514 AA419011 AI269149 AI245259 AI970008 AI970017 AW139445 AA569503 AI761072 AI766179 AI759995 AI300776 AI870129 AW150770 AA226501 AA226220
121913	291015_1	AI249368 AI742316 AA428062 AA442089 AI864189 BE349478 AI803475 AI584049 BE552085 AI088609 AI264197 AI866144 AI129474 AI307145 BE181300 AW058403 AI696838 AW748598 AA442196 AI216428
102398	entrez_U42359U42359	
315051	347217_1	AW292425 BE467167 AI702953 BE550961 BE222309 AI299348 AI693336 AA541708
324626	336411_1	AI685464 AW971336 AA513587 AA525142
319191	16065_1	NM_012391 AF071538 AB031549 AI685592 AI745526 AA662204 AW130657 AA662164 AW971121 AI668916 AA513274 AI991223 AI979170 AW298436 AA639821 AI859010 AW513942 AI687669 AA662521 AA548598 AI345056 AI305374 BE043418 AI432856 AI334840 AI379796 AI492693 AI307915 BE042082 AI307834 AI307858 AI309488 BE042210 AI435670 AI371605 AI862491 AI284563 AI306872 AI255044 AI254601 AI251236 AI473073 AI473042 AI432760 AI435664 AI336826 AI289365 AI369096 AI862274 AI334871 AI349863 AI250405 AI377617 AI309895 AI313017 AI862291 AI311936 AI378718 AI305722 AI306769 AI308888 AI334565 AI862296 AI344230 AI435685 AI344087 AI378696 AI311209 AI435775 AI310611 AI311154 AI432289 AI431561 AI492681 AI432867 AI335288 AI492796 AI432769 AI310299 AI432273 AI378820 AI275319 AI435753 AI609441 AI432767 AI369100 AI311420 AI349974 AI247157 AI334877 AI270910 AI224320 AI305608 AI334489 AI377152 AI350012 AI370086 AI335053 AI306781 AI306750 AI334849 AI334874 AI340380 AI307876 AI305974 AI305972 AI311521 AI334872 AI862509 AI311498 AI335051 AI289684 AI310859 AI311862 AI862483 AI492775 AI307906 AI492708 AI289693 AI340373 AI307910 AI311359 AI435653 AI334865 AI311492 AI492809 AI492690 AI431576 AI862268 AI311879 AI308435 AI492792 AI862512 AI275321 AI431568 AI431564 AI307885 AI307826 AI435692 AI435778 AI310182 AI308894 AI492707 AI492713 AI308560 AI307829 AI343234 AI580598 AW472796 AI340918 AI310243 AI309368 AI307820 AI289655

5 AI306777 AW086318 AW086292 AW086378 AI310027 AI275293 AI369082 AI340900 AI306749 AI371558 AW086287 BE043803  
AI306783 AI306272 AI287048 AI270917 AI284818 AI336813 AI284546 AI308044 AI275290 AI270872 AI306795 AI289687 AI223570  
AI305303 AI289677 AI287742 AI275284 AI306812 AI336701 AI371554 AI378719 AI344988 AI223831 AI335141 AI343222 AI284568  
AI305357 AI275270 AI345932 AI346549 AI307925 AI311502 AI344238 AI343182 AI308508 AI305988 AI270790 AI379792 AI305647  
AI305410 AI432251 AI436517 AI343227 AI305534 AI340387 AI271043 AI305499 AI271046 AI305962 AI289465 AI305378 AI289725  
AI310848 AI305848 AI289362 AI252964 AI307049 AI310831 AI306993 AI306796 AI224659 AI305969 AI349855 AI306184 AI306948  
AI284676 AI309155 AI343202 AI432785 AI306815 AI369081 AI270885 AI289699 AI435704 AI308647 AI305716 AI311281 AI287927  
AI472995 AI340423 AI270958 AI307089 AI305364 AI270807 AI275306 AI311890 AI275263 AI432750 AI289371 AI432861 AI255113  
10 AI305709 AI473008 AI311168 AI309711 AI377164 AI271201 AI289560 AI309710 AI306195 AI311201 AI287741 AI271066 AI432876  
AI275281 AI379795 AI472872 AI311867 AI306826 AI305465 AI270792 AI473019 AI305340 AI270922 AI305995 AI305462 AI254144  
AI270969 AI473012 AI305390 AI275278 AI223644 AI289692 AI250318 AI305372 AI289691 AI250521 AI306283 AI306814 AI307933  
AI473160 AI432903 AI223720 AI254979 AI343862 AI306926 AI289541 AI432248 AI435722 AI435698 AI432859 AI310683 AI473175  
AI335144 AI289487 AI436489 AI306928 AI473033 AI305783 AI307888 AI307882 AI348959 AI435736 AI432857 AI432896 AI435735  
15 AI432283 AI473086 AI432863 AI473081 AI432825 AI307840 AI473164 AI432885 AI473166 AI472982 AI435734 AI473060 AI473171  
AI432279 AI432882 AI34670 AI436512 AI432827 AI432852 AI473051 AI473077 AI435697 AI271509 AI492781 AI472883 AI473018  
AI432897 AI473043 AI432871 AI436536 AI473157 AI439715 AI432777 AI473016 AI473158 AI340369 AI307941 AI432773 AI377146  
AI492791 AI270950 AI305342 AI284604 AI306269 AI284811 AI270811 AI289347 AI334869 AI334852 AI311759 AI250382 AI309520  
AI289550 AI305721 AI340870 AI270901 AI308575 AI307804 AI340715 AI270941 AI309808 AI248867 AI473014 AI307039 AI289360  
20 AI473069 AI492788 AI344013 AI305876 AI436510 AI340742 AI473028 AI307891 BE041871 BE041268 BE042340 BE041946  
BE041783 AI306173 AI201948 AI926972 AI275769  
338255 CH22\_685FG\_LINK\_EM:AC00  
330211 c\_5\_p2  
332798 CH22\_14FG\_6\_5\_LINK\_C4G1.G  
334447 CH22\_1746FG\_387\_7\_LINK\_EM  
25 332247 372969\_1 AA669097 AA513815 AA026798 AA676526 AA704429 AA704269 AW118292 AA579216 N58172  
332396 20265\_1 AW579842 BE156562 BE156690 BE156489 BE081033 AK001559 BE149402 M85387 AW367811 AW367788 R17370 AI908947  
AA382932 R58449 H18732 AA371231 AW962899 AA713530 AW892946 R53463 H11063 AW068542 Z40761 BE176212 BE176155  
W23952 W92188 AW374883 AA303497 AW954769 AA036808 BE168063 AW382073 AW382085 AL041475 H80748 AI078161  
BE463983 AI805213 AI761264 W94885 N94502 AI623772 AI419532 AI810302 AI634190 AW002516 AW150777 AI352312 AI367474  
30 AW204807 AI675502 AI337026 AW134715 BE328451 AI123157 AI560020 AI300745 AI608631 AI248873 AA742484 AW051635  
H18646 AI245045 AA507111 AI640510 AI925594 AA115747 AA143035 AA151106  
332697 13699\_1 X51405 NM\_001873 T11322 AL118886 BE328175 AW138009 BE467445 AW470313 AA774852 BE504139 AW501048 AA082792  
AW389231 AA370044 R36841 AA371457 C04813 R25791 R25556 AW895854 AW903819 AW895671 AW895677 BE159723  
35 AW895664 AW895597 AW895595 AW895665 AW888518 AI903724 F06081 F08503 AL119462 AW895730 AW888518 R26511  
R26489 AA334126 AA327626 N85713 AW895998 AA223622 F05468 AA370749 W05590 M78202 AA371073 AW498607 R15017  
T16991 AA001282 AA001138 AA551566 AA330159 AI922855 AA383512 AA029603 D82248 D82171 T94933 H56545 AA348060  
AA176888 R96764 AW451817 AA385766 AA452618 AI690057 AA888822 BE549928 AA150301 W57992 AW899925 C05281  
40 AA932042 AA370980 AW962877 W04741 AA369982 AW385948 AA822466 N75882 AA422070 AI361256 AI680224 D57122 T94885  
R53266 R46713 T19071 AW796277 AA325333 F04719 F02334 AA358146 AA626597 AA358304 AW028099 AL119570 D57290  
D58273 D57796 N48555 AI361969 AA329457 D57225 AW024046 AA992606 AW022118 AW021538 AA935845 H88870 H56546  
AW961219 AA453239 AW837541 N45521 BE218029 AA318877 AA327740 AW961809 T92139 D53216 D52365 D53363 D53312  
D53116 AI547257 AA679935 AW026552 AW026418 AW190507 AI927710 AW244108 D50948 AW054991 AW021063 AW022511  
45 AA493436 AI365636 BE464751 AW149384 AA102442 AW771368 AI818251 AI126368 D51049 AI421542 AI559467 AW079779  
AW021048 AW023969 AW044214 AI458264 AA027274 AI620254 AW028917 BE219511 AA326242 N67561 AI971273 AA878328  
D57131 AA770662 AI309299 AI796767 AA613338 W58078 AI588287 AA45573 AI880260 AA001919 AW339259 AA92610 AI492811  
R97692 AI301425 AA722603 D58361 AI350323 AA973928 AI431263 AA516126 AA865467 AI925177 N39443 AA001943 AI289371  
50 AI082412 AA665090 AA583433 H89871 AA977231 AI362219 AI056096 AI270446 N67524 N22103 AW614224 AA744054 AW243622  
AI613188 AI929173 AI350243 AI362138 AA744004 AA176661 D56787 AI955625 AI393109 AI094769 AI479728 AI423107 AI955617  
AI034036 AI582196 AW264534 AI418961 AA570761 AI343538 AA650341 AA992503 AA770004 AI039668 AI862675 AW190335  
AA610274 AW416627 BE467472 D56786 T28749 AI217610 AI359556 T23523 AL040189 AA846222 AA651636 D51280 AI888986  
AI521167 AI340177 AW612815 AI625285 AA621607 AA177059 AA229768 AA829788 AI749682 AW190631 N75299 AA230089  
AI915632 BE069542 AA890020 AA528397 AA995390 BE503860 AA570812 AW339396 AI197986 AI203725 AI282379 AA670375  
AA461513 F01728 AW243599 C00856 N75567 R95995 AA150932 R95961 AA648060 AA833800 AA927073 AA101126 AA864190  
55 T93566 BE167472  
AF030880 NM\_000441 AC002467 AA385554 H23053 AW891838 AI139968 AA653057 AI695233  
AA527941 AI810808 AI620190 AA635266  
AB028945 T77648 F13328 AL157605 Z46212 AA304736 F11855 T66098 T30174 AW954164 AW176301 AW748243 AA456428  
AI368958 AA938565 AW959813 Z42008 AA994778 AI683909 F11019 F10926 AI769597 AI752550 T65015 AI884314 AA643954  
60 Z41838 AW020147 AI038822 AW571822 AA299781 AA894928 AF131790 BE005411 AI902476 AW082695 AA644384 R42750  
AW902301 AA464273 R05837 Z38294 H41098 AL134507 M86079  
447210 7119\_1 AF035269 AF035268 NM\_015900 T96213 U37591 AA156832 AA299371 AI084325 H95977 AI765967 BE221465 AA156726 AI969563  
AW024539 AI436791 AI949451 AA843093 AI452756 AA824232 AI306667 T96131 AW207447 AW243558 AW957032 AI084332  
H95978 U30998  
65 449625 8113\_1 NM\_014253 AF100772 BE089769 AL022718 BE161779 AW883569 BE161640 AL039060 BE168542 AW296554 AA323193 AA235370  
AW779760 N48674 AI375997 R45432 D59344 AI203107 F07491 R35360 R25094 AI913631 AI498402 T61382 AI016320 N45526  
T61415 AA331486  
452039 89513\_1 AI922988 H05475 AA021608 AW169947 AA913750 Z41614 AW800012

**TABLE 15B** shows the genomic positioning for those primekeys lacking unigene ID's and accession numbers in Table 15. For each predicted exon, we have listed the genomic sequence source used for prediction. Nucleotide locations of each predicted exon are also listed.

5	Pkey:	Unique number corresponding to an Eos probeset		
10	Ref:	Sequence source. The 7 digit numbers in this column are Genbank Identifier (GI) numbers. "Dunham I. et al." refers to the publication entitled "The DNA sequence of human chromosome 22." Dunham I. et al., Nature (1999) 402:489-495.		
	Strand:	Indicates DNA strand from which exons were predicted.		
	Nt_position:	Indicates nucleotide positions of predicted exons.		
15	Pkey Ref	Strand	Nt_position	
	334447 Dunham, I. et.al.	Plus	14308764-14308824	
	332798 Dunham, I. et.al.	Minus	232147-231974	
	338255 Dunham, I. et.al.	Minus	15242284-15242231	
20	330211 6013592	Plus	59158-59215	
	401424 8176894	Plus	24223-24428	

## TABLE 11 AND SEQUENCE LISTING

SEQ ID NO:1 BCU4 DNA SEQUENCE

5 Nucleic Acid Accession #: NM\_024915  
Coding sequence: 13-1890 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51

10 ATTGGATCAA ACATGTCACA AGAGTCGGAC AATAATAAAA GACTAGTGGC CTTAGTGCCC 60  
ATGCCAGCTG ACCCTCCATT CAATACCCGA AGAGCCTACA CCAGTGAGGA TGAAGCCTGG 120  
AAGTCATACT TGGAGAATCC CCTGACAGCA GCCACCAAGG CCATGATGAT CATTAAATGGT 180  
GATGAGGACA GTGCTGCTGC CCTCGGCTCG CTCTATGACT ACTACAAGGT TCCTCGAGAC 240  
AAGAGGCTGC TGTCTGTAA GCAAAGCAAGT GACAGCCAAG AAGACCAGGA GAAAAGAAAC 300  
TGCCCTGGCA CCAGTGAAAG CCAGAGTAAT TTGAGTGGAG GAGAAAACCG AGTGCAAATC 360  
CTAAAGACTG TTCCAGTGAA CCTTCCCTA AATCAAGATC ACCTGGAGAA TTCCAAGCGG 420  
GAACAGTACA GCATCAGCTT CCCCAGAGAG TCTGCCATCA TCCCGGTGTC GGGAAATCAG 480  
GTGGTGAAAG CTGAAGATTT CACACCAGTT TTCTATGGCC CACCTGTGCA CTATCCCGG 540  
GGAGATGGGG AAGAGCAACG AGTGGTTATC TTTGAACAGA CTCAGTATGA CGTGCCCTCG 600  
CTGGCCACCC ACAGCGCCTA TCTCAAAGAC GACCAGCGCA GCACTCCGGA CAGCACATAC 660  
AGCGAGAGCT TCAAGGAGCG AGCCACAGAG AAATTTCCGA GTGCTTCAGT TGGGGCTGAG 720  
GAGTACATGT ATGATCAGAC ATCAAGTGGC ACATTTCACT ACACCTCGGA AGCCACCAAA 780  
TCTCTCCGTG AGAAGCAAGG GGAGGGCCCG ATGACCTACC TCAACAAAGG ACAGTTCTAT 840  
GCCATAACAC TCAGCGAGAG CGGAGACAAC AAATGCTTCC GACACCCCAT CAGCAAAGTC 900  
AGGAGTGTGG TGATGGTGGT CTTCACTGAA GACAAAAACA GAGATGAACA GCTCAAATAC 960  
TGGAAATACT GGCACCTCG GCAGCATAAG CGGAAGCAGA GGGTCCCTGA CATTGCCGAT 1020  
TACAGGAGA GCTTTAATAC GATTGGAAAC ATTGAAGAGA TTGCATATAA TGCTGTTTCC 1080  
TTTACCTGGG ACGTGAATGA AGAGGCGAAG ATTTTCATCA CCGTGAATTG CTTGAGCACA 1140  
GATTTCCTCT CCAAAAAGG GGTGAAAGGA CTCTCTTGA TGATTCAGAT TGACACATAC 1200  
AGTTATAACA ATCTAGCAA TAAACCCATT CATAGAGCTT ATTGCCAGAT CAAGGTCTTC 1260  
TGTGACAAAG GAGCAGAAAG AAAAAATCCGA GATGAAGAGC AGAAGCAGAA CAGGAAGAAC 1320  
GGGAAAGGCC AGGCTCCCA AACTCAATGC AACAGCTCCT CTGATGGGAA GTTGGCTGCC 1380  
ATACCTTTAC AGAAGAAGAG TGACATCACC TACTTCAAAA CCATGCCTGA TCTCCACTCA 1440  
CAGCCAGTTC TCTTCATACC TGATGTTTAC TTTGCAAAAC TGACAGGAGC CGGACAGGTG 1500  
TATTACACA CGGATGATGA ACGAGAAGGT GGCAGTGTCC TTGTTAAACG GATGTTCCGG 1560  
CCCATGGAAG AGGAGTTTGG TCCGCTGCTT TCAAAGCAGA TGAAAGAAGA AGGGACAAAG 1620  
CGAGTGCTCT TGTACGTGAG GAAGGAGACT GACGATGTGT TGATGCAAT GATGTTGAAG 1680  
TCTCCACAG TGATGGAGCG GATGGAAGCG ATATCTGAGA AATATGGGCT GCCCGTGGAG 1740  
AAGATAGCAA AGCTTTACAA GAAAAGCAAA AAAGGCATCT TGGTGAACAT GGATGACAAC 1800  
ATCATCGTGA AAGCTGCTAG CGAGGACACC TTCATCTCA ACATGGAGAG CATGGTGGAG 1860  
GGCTTCAAGG TCAGCTCAT GGAATCTAG CCTGGGTTT GGCATCCGCT TTGGCTGGAG 1920  
CTCTCAGTGC GTTCTCCCT GAGAGAGACA GAAGCCCCAG CCCCAGAAC TGGAGACCCA 1980  
TCTCCACCCT CTCACATCTA TGTTCACAAG ACCGTGCTGG GAGTGGGGC AAGGACAGG 2040  
CCCCACAGTC GGTGTGCTTG GCCCATCCAC TGGCACTAC CACGGAGCCG AAGCCTGAGC 2100  
CCTCAGGAA GGTGCTTAG GCTGTGTTGA TTCTATTTA TTGCCAACC TTCTCTGGAG 2160  
CCCAGGTCCA GGCOCGCCAG GACTCTGAG GTCACTGCTA GCTCCAGATG AGACCGTCCA 2220  
GGGTCCCCC TTCAAGAGAA ACACCTCATCC CGAACAGCCT AAAAAATCC CATCCCTTCT 2280  
TTCTACCCCT TCCATATCTA TATCTCCGA GTGGCTGGAC AAAATGAGCT ACGTCTGGGT 2340  
CGAGTAGTTA TAGGTGGGGC AAGAGGTGGA TGCCCACTTT CTGGTCAGAC ACCTTTAGGT 2400  
TGCTCTGGGG AAGGCTGTCT TGCTAAATAC CTCAGGGTTT CCAAGCAAGT GGCCACCAAG 2460  
CCTGTACAG GAAGACATTC AGTCAACGTG TAATTAGTAA CACAGAAAGT CTGCTGTCT 2520  
GCATGTACA TAGTGTAT ATATTTGTA TAATATATT TACCTGTGAT ATGTGGGCAT 2580  
GTTACTGCC ACTGGCTAG AGGAGACACA GACCTGGAGA CGGTTTAAT GGGGGTTTTT 2640  
GCCTCTGTGC CTGTTCAAGA GACTTGCAAG GCTAGGTAGA GGGCCTTTGG GATGTTAAGG 2700  
TGACTGCAGC TGATGCCAAG ATGGACTCTG CAATGGGCAT ACGTGGGGGC TCCTCCCTG 2760  
TCCOCAGAGG AAGCCCCCTC TCCTCTCCA TGGGCATGAC TCTCTTCA GGCACCAACG 2820  
TTTATCTCAC AATGATGTGT TTTGCCGAC TTCTCTTG CGCTGTCTG TGGGAAAGGT 2880  
CATCTGTCT GAGACCCAG CTCCTCTCC AGCTTTGGCT GCGGGCATGG CTTGAGCTTT 2940  
CTGGAGAGCC TCTCAGGGG GTTTGCCATC AGGGCCCTGT GCTGGGTCT GCTGCAGAGC 3000  
TCCTTGGCTA TCAGGAGAAT OCTGGACACT GTACTGTGCC TCCAGTTTA CAAACACGCC 3060  
CTTCATCTCA AGTGGCCCTT TAAAAGGCC GCTGCCATGT GAGAGCTGTG AACAGCTCAG 3120  
CTCTGAGTGG CGAGACTTGG GCTTCTCT GGGCCACCAG ATGGAAGGG GGTATTGTTT 3180  
GCCTCACTCC TGGATGCTG GTTTAAGGA AGTGAAGTGA AAGAATGTG CCAAGATACC 3240  
TGGCTCCTGT GAAACACGCC TCAGGAGGGA AACTGGGAGA GAGAAGCTGT GGTCTCTGTC 3300  
TACATGCCCT GGGAGCTGGA AGAGAAAAAC ACTCCCTAA ACAATCGCAA AATGATGAAC 3360  
CATCATGGGC CACTGTTCTC TTTAGGGGA CAGGTTTAGG GGTITGGT CGCCCTTTGT 3420  
GGCTGAAACA CTAGCTTTT GTAGCTAGA CACATCTGC ACCCAAAGGT TCTCTACAAA 3480  
GGCCAGATT TGTTTGTA GCACTTTGAC TCTTACCTGG AGGCCCGCTC TCTAAGGGCT 3540  
TCTGCGCTC CCACCTCATC TGTCCTGAG ATGCAGAGCA GGATGGAGGG TCTGCTCTA 3600  
GCTCAGCTGT TCTCTCTGA GGTGGGGAG GAATTGAAT GAATGGGACA GAGGCGAGT 3660  
GCTGTGCCA AGAAGATCTC CGAGCAGCAG TGACGGGGCA CCTTGTCTGT TGCTCTTGG 3720  
GCATGTAAAC CTTCTGTGG GGCCAAAGGT TTGCATGCTG GATCCAGCTG TGCTCCAGTC 3780  
TGTCCCTCC TCTCTCACTC TGACTGCCAC GCCCCGGAAC AGCAGCTTGG GGACCCCTCA 3840  
GGTATCTAAT GGGGCTCTGT TCTGAGATGG ACAAAATCAG TGTGGAAAT ACATGTTGTA 3900  
CTATGCATT CCACTGCTCC TAGGGTTAGG AATAGTTTCA AACATGATTG GCAGACATAA 3960  
CAACGGCAA TACTCGACT GGGGCATAGG ACTCCAGAGT AGGAAAAAGA CAAAGATTT 4020  
GGCAGCTCA CACAGGCAAC CTACCCCTCT CTCTCCAGCC TCTTTATGAA ACTGTTTGT 4080  
TGCCAGTCTC GCCTAAGGC AGAAGATGAA TTGAAGATGC TGTGATGTT TCCTAAGTCC 4140  
TTGAGCAATC ATGTTGTGTA CAATTGCCAC AAGGATATG AGGCCAGTGC CACCAGAGGG 4200

5 TGGTGCCAAAG TGCCACATCC CTTCGGATCC ATTOCCCTCT GTATCTCGG AGCACCCAG 4260  
 TTTGCCCTTG ATGTGTCCGC TGTGTATGTT AGCTGAACCT TGATGAGCAA AATTCTCTGA 4320  
 GCGAAACACT CCAAAGAGAT AGGAAAACCT GCCGCCTCTT CTTTTTGTG CCTTAATCAA 4380  
 ACTCAAAATA GCTTAAAAAA AATCCATGGA AGATCATGGA CATGTGAAAT GAGCATTITT 4440  
 10 TCTTTTCTT TTTTTTTTT TTTTITTAAC AAAGTCTGAA CTGAACAGAA CAAAGACTTT 4500  
 TCCTCATACA TCTCCAAAT GTTTAAACTT ACTTTATGAG TGTTTGTTA GAAGTTCCGA 4560  
 CCAACAGAAA AATGCAGTCA GATGTCATCT TGGAAATGGT TTTCTAAAAGA GTAAGGCATG 4620  
 TCCCTGCCCA GAAACTTAGG AAGCATGAAA TAAATCAAAT GTTTATTTTC CTCTTATT 4680  
 AAAATCATGC TAATGCAACA GAAATAGAGG GTTTGTGCCA AATGCTATGA ACGGCCCTTT 4740  
 CTAAAGACA AGCAAGGGAG ATTGATATAT GTACAATTG CTCTCATGTT TTT

SEQ ID NO:2 BCU4 Protein sequence:  
 Protein Accession #: NP\_079191.1

15 1 11 21 31 41 51  
 MSQESDNNKR LVALVMPSPD PPFNTERRAYT SEDEAWKSYL ENPLTAATKA MMHNGDEDS 60  
 20 AAALGLLYDY YKVRPRDKRL SVSKASDSQE DQEKRNCLGT SEAQSNLSGG ENRVQVLKTV 120  
 PVNLISLNQDH LENSREQYS ISFPSSAII PVSGITVVK AEDFTVPMAP PVHYPRGDGE 180  
 BQRVVFIEQT QYDVPSLATH SAYLKDDQRS TPDSTYSEF KDAATEKFRS ASVGAEYMY 240  
 DQTSSTGTFQY TLEATKSLRQ KQEGGPMTYL NKGQFYAITL SETGDNKCFR HPISKVRSVV 300  
 MVVPSSEDKNR DEQLKYWKYW HSRQHTAKQR VLDIADYKES FNTIGNIEEI AYNAVSTWD 360  
 25 VNEAKFIT VNCLSTDFSS QKGVKGLPLM IQIDTYSYNN RSNKPIHRAY CQIKVFCDKG 420  
 AERKIRDEEQ KQNRKNGKGQ ASQTCQNSSS DOKLAAIFLQ KKSIDITYFKT MPDLHSQFVL 480  
 FPDVHFANL QRTGQVYYNT DDEREGGSVL VKRMFRPMEB EFGVPFSKQM KEEGTRKRL 540  
 YVRKETDDVF DALMLKSPTV MGLMEAISEK YGLPVEKIAK LYKSKKGL VMMDNIEH 600  
 YSNEDTFLN MESMVEGFKV TLMEI

# SEQ ID NO:3 BCU7 DNA SEQUENCE VARIANT 1:

Nucleic Acid Accession #: AA428062  
 Coding sequence: 1-777 (entire sequence represents open reading frame)

35 1 11 21 31 41 51  
 ATGATAGCAA TCTCTGCCGT CAGCAGTGCA CTCCTGTTCT CCTTCTCTG TGAAGCAAGT 60  
 40 ACCGTCGTCC TACTCAATTC CACTGACTCA TCCCGGCCAA CCAATAATTT CACTGATATT 120  
 GAAGCAGCTC TGAAGACACA ATTAGATTCA GCGGATATCC CCAAGCCAG GCGGAAGCGC 180  
 TACATTTTCG AGAATGACAT GATCGCCATT CTGTGATTATC ATAATCAAGT TCGGGGCAAA 240  
 GTGTTCCAC CCGCAGCAAA TATGGAATAT ATGGTTTGGG ATGAAAATCT TGCAAAATCG 300  
 GCAGAGGCTT GCGCGGCTAC TTGCATTGGG GACCATGGAC CTCTTACTT ACTGAGATT 360  
 45 TTGGGCCAAA ATCTATCTGT ACGCACTGGA AGATATCGCT CTATTCTCCA GTTGGTCAAG 420  
 CCATGGTATG ATGAAGTGAA AGATTATGCT TTTCATATC CCGAGGATTG CAACCCAGA 480  
 TGTCTATGTA GATGTTTGG TCCCATGTGC ACACATTATA CGCAGATGGT TTGGGCCACT 540  
 TCCAATCGGA TAGGATGCGC AATTCAATGCT TGCCAAAACA TGAATGTTTG GGGATCTGTG 600  
 TGGCAGCTG CAGTTTACTT GGTATGCAAC TATGCCCAA AGGGCAATTG GATTGGAGAA 660  
 50 GCACCATATA AAGTAGGGGT ACCATGTTCA TCTTGCTCTC CAGTTTATGG GGGATCTTGT 720  
 ACTGACAATC TGTGTTTCC AGGAGTTACG TCAAACATACC TGTACTGGTT TAAATAA

# SEQ ID NO:4 BCU7 DNA SEQUENCE VARIANT 2:

Nucleic Acid Accession #: AA428062  
 Coding sequence: 1-777 (entire sequence represents open reading frame)

55 1 11 21 31 41 51  
 60 ATGATAGCAA TCTCTGCCGT CAGCAGTGCA CTCCTGTTCT CCTTCTCTG TGAAGCAAGT 60  
 ACCGTCGTCC TACTCAATTC CACTGACTCA TCCCGGCCAA CCAATAATTT CACTGATATT 120  
 GAAGCAGCTC TGAAGACACA ATTAGATTCA GCGGATATCC CCAAGCCAG GCGGAAGCGC 180  
 TACATTTTCG AGAATGACAT GATCGCCATT CTGTGATTATC ATAATCAAGT TCGGGGCAAA 240  
 65 GTGTTCCAC CCGCAGCAAA TATGGAATAT ATGGTTTGGG ATGAAAATCT TGCAAAATCG 300  
 GCAGAGGCTT GCGCGGCTAC TTGCATTGGG GACCATGGAC CTCTTACTT ACTGAGATT 360  
 TTGGGCCAAA ATCTATCTGT ACGCACTGGA AGATATCGCT CTATTCTCCA GTTGGTCAAG 420  
 CCATGGTATG ATGAAGTGAA AGATTATGCT TTTCATATC CCGAGGATTG CAACCCAGA 480  
 TGTCTATGTA GATGTTTGG TCCCATGTGC ACACATTATA CGCAGATGGT TTGGGCCACT 540  
 70 TCCAATCGGA TAGGATGCGC AATTCAATCT TGCCAAAACA TGAATGTTTG GGGATCTGTG 600  
 TGGCAGCTG CAGTTTACTT GGTATGCAAC TATGCCCAA AGGGCAATTG GATTGGAGAA 660  
 GCACCATATA AAGTAGGGGT ACCATGTTCA TCTTGCTCTC CAGTTTATGG GGGATCTTGT 720  
 ACTGACAATC TGTGTTTCC AGGAGTTACG TCAAACATACC TGTACTGGTT TAAATAA

SEQ ID NO:5 BCU7 Protein sequence Variant 1:  
 Protein Accession #: none

75 1 11 21 31 41 51  
 MIAISAVSSA LLPELLCEAS TVVLLNSTDS SPFTNNFTDI EAALKAQLDS ADIPKARRKR 60

YISQNDMIAI LDYHNQVRGK VFPPAANMEY MVWDENLAKS AEAWAATCIW DHGFSYLLRF 120  
 LGQNLISVRTG RYRSILQLVK FWYDEVKDYA FYPQDCNPR CFMRCPGPMC THYTMVWAT 180  
 SNRIGCAIHA CQNMNVWGSV WRRAVYLVCN YAPKGNWIGE APYKVGVPSC SCPPSYGGSC 240  
 TDNLCPGVT SNLYLWFK

SEQ ID NO:6 BCJ7 Protein sequence Variant 2:  
 Protein Accession #: none

1 11 21 31 41 51  
 HIAISAVSSA LLFSLICEAS TVVLLNSTDS SPPTNNFTDI EAALKAQLDS ADIPKARRKR 60  
 YISQNDMIAI LDYHNQVRGK VFPPAANMEY MVWDENLAKS AEAWAATCIW DHGFSYLLRF 120  
 LGQNLISVRTG RYRSILQLVK FWYDEVKDYA FYPQDCNPR CFMRCPGPMC THYTMVWAT 180  
 SNRIGCAIHA CQNMNVWGSV WRRAVYLVCN YAPKGNWIGE APYKVGVPSC SCPPSYGGSC 240  
 TDNLCPGVT SNLYLWFK

## SEQ ID NO:7 BCX2 DNA SEQUENCE

Nucleic Acid Accession #: NM\_003014  
 Coding sequence: 238-1278 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
 GGCGGGTTGG CGCCCCGAAG GCTGAGAGCT GCGCTGCTC GTGCCCTGTG TGCCAGACGG 60  
 CGGAGCTCCG CGGCGCGGACC CCGCGGCCCC GCTTTGCTGC CGACTGGAGT TTGGGGGAAG 120  
 AAACCTCTCT GCGCCCCAGA AGATTCTTTC CTCGGCGAAG GGACAGCGAA AGATGAGGGT 180  
 GGCAGGAAGA GAAGGCGCTT TCTGTCTGCC GGGGTGCGAG CGCGAGAGGG CAGTGCCATG 240  
 TTCTCTCCA TCCTAGTGGC GCTGTGCTG TGGCTGCACT TGGGCTGGG CGTGCGCGGC 300  
 GCGCCCTGCG AGGCGGTGCG CATCCCTATG TGCCGGCACA TGCCCTGGAA CATCAOGCGG 360  
 ATGCCCAACC ACCTCCCGGA CAGCAGCGAG GAGAACGCCA TCCTGGCCAT CGAGCAGTAC 420  
 GAGGAGCTGG TGGACGTGAA CTCGAGCGCG GTGCTGCGCT TCTTCTCTG TGCCATGTAC 480  
 GCGCCCATTT GCACCCCTGGA GTTCTGTCAC GACCCATCA AGCGGTGCAA GTCGGTGTGC 540  
 CAACGCGCGC GCGACGACTG CGAGCCCTTC ATGAAGATGT ACAACCCAG CTGGCCCGAA 600  
 AGCCTGGCCT GCGACGAGCT GCTGTCTAT GACCGTGGCG TGTGCATTT GCCTGAAGCC 660  
 ATCGTACCGG ACCTCCCGGA GGATGTTAAG TGGATAGACA TCACACCAGA CATGATGGTA 720  
 CAGGAAAGGC CTCTTGATGT TGACTGTAAA CGCCTAAGCC CCGATCGGTG CAAGTGATAA 780  
 AAGGTGAAGC CAACCTTTGG AACGTATCTC AGCAAAACT ACAGCTATGT TATTATGCG 840  
 AAAATAAAGC GTGTGCAGAG GAGTGGCTGC AATGAGGTCA CAACGGTGGT GGATGTAAAA 900  
 GAGATCTTCA AGTCTCTATC ACCCATCCCT CGAACTCAAG TCCGCTCAT TACAATTCT 960  
 TCTTGCCAGT GTCCACACAT CCTGCCCAT CAAGATGTTT TCATCATGTG TTACGAGTGG 1020  
 CGTTCAAGGA TGATCTTCTT TGAATAATGC TTAGTTGAAA AATGGAGAGA TCAGCTTAGT 1080  
 AAAAGATCCA TAGCTCTTCA AGAGAGGCTG CAGGAACAGC GGAGAACAGT TCAGGACAAG 1140  
 AAGAAACAGC CCGGGGCGAC CAGTGTAGT AATCCCCCA AACCAAGGG AAAGCCTCT 1200  
 GCTCCCAAC CAGCCAGTCC CAAGAAGAAC ATTAATACTA GGAGTGCCA GAAGAGAA 1260  
 AACCCGAAAA GAGTGTGAGC TAACATGTTT CCAAAGCGGA GACTTCCGAC TTCCTTACAG 1320  
 GATGAGGCTG GGCATTGCTT GGGACAGCCT ATGTAAGGCC ATGTGCCCTT TGCCCTAACA 1380  
 ACTCACTGCA GTGCTCTTCA TAGACACATC TTGCAGCAAT TTCTTAAGG CTATGCTTCA 1440  
 GTTTTCTTT GTAAAGCATC ACAAGCCATA GTGGTAGGTT TGCCCTTTGG TACAGAAGGT 1500  
 GAGTTAAAGC TGGTGGAAAA GGCTTATGTC ATTGCATTCA GAGTAACCTG TGTGCATCT 1560  
 CTAGAAGAGT AGGGAATAA ATGCTTGTTA CAATTCGACC TAATATGTGC ATTGTAAAA 1620  
 AAATGGCATA TTTCAACAA AACACGTAAT TTTTITACAG TATGTTTTAT TACCTTTTGA 1680  
 TATCTGTGT TGAATGTTA GTGATGTTT AAAATGTGAT GAAATATAA TGTTTTAAAG 1740  
 AAGGAACAGT AGTGAATGA ATGTTAAAAG ATCTTTATGT GTTTATGGTC TGCAGAAGGA 1800  
 TTTTGTGAT GAAAGGGGAT TTTTGAATA ATTAGAGAAG TAGCATATGG AAAATTATAA 1860  
 TGTGTTTTTT TACCAATGAC TTCAGTTCT GTTTTAGCT AGAAACTTAA AAACAAAAAT 1920  
 AATAATAAG AAAAATAAT AAAAAGGAGA GGCAGACAAT GTCTGGATTC CTGTTTTTGG 1980  
 GTTACCTGAT TTCCATGATC ATGATGCTTC TTGTCAACAC CCTCTAAGC AGCAACAGAA 2040  
 ACAGTGAGTT TGTCTGTACC ATTAGGAGTT AGGTACTAAT TAGTTGGCTA ATGCTCAAGT 2100  
 ATTTTATACC CACAAGAGAG GTATGTCAC CATCTTACTT CCCAGGACAT CCACCTGAG 2160  
 AATAATTGA CAAGCTTAAA AATGGCCTTC ATGTGAGTGC CAAATTTTGT TTTTCTTCAT 2220  
 TTAATATTT TCTTTGCCCTA AATACATGTG AGAGGAGTTA AATATAATG TACAGAGAGG 2280  
 AAAGTTGAGT TCCACCTCTG AAATGAGAAT TACTTGACAG TTGGGATACT TTAATCAGAA 2340  
 AAAAAGAACT TATTGACAG ATTTTATCAA CAAATTTTCA AATTGTGGAC AATTGGAGGC 2400  
 ATTTATTTTA AAAAACAATT TTATTGGCTT TTGCTAACA CAGTAAGCAT GTATTTTATA 2460  
 AGGCATTCAA TAAATGCACA ACGCCCAAAG GAAATAAAAT CCTATCTAAT CCTACTCTCC 2520  
 ACTACACAGA GGTAATCACT ATTAGTATT TGGCATATTA TCTCCAGGT GTTTGCTTAT 2580  
 GCACCTATAA AATGATTGA ACAATAAAA CTAGGAACCT GTATACATGT GTTTCATAAC 2640  
 CTGCTCTCTT TGCTTGGCCC TTTATGAGA TAAGTTTCC TGTCAAGAAA GCAGAAACCA 2700  
 TCTCATTTCT AACAGCTGTG TTATATCCA TAGTATGCAT TACTCAACAA ACTGTTGTGC 2760  
 TATGGATAC TTAGGTGTTT TCTTCACTGA CAATACTGAA TAAACATCTC ACCGGAATTC

SEQ ID NO:8 BCX2 Protein sequence:  
 Protein Accession #: NP\_003005.1

1 11 21 31 41 51  
 MFLSILVALC LWLHLALGVR GAPCEAVRIP MCRHMPWNIT RMPNHLHHST QENAILAIEQ 60

5 YEELVDVNCV AVLRFFFCAM YAPICTLEFL HDPIKPKSV QQRARDCEP LMKMYNHSWP 120  
ESLACDELVP YDRGVCSISPE AIVTDLPEDV KWIDITPDMM VQERPLDVDC KRLSPDRCKC 180  
KKVKPILATY LSKNYSYVIH AKIKAVQSRG CNEVTTVVDV KEIFKSSSPI PRTOVPLITN 240  
SSQCQPHLP HQDVLIMCYE WSRMMLLEN CLVEKWRDQL SKRSIQWEER LQEQRTVQD 300  
KKKTAGRTSR SNPPKPKGKP PAPKASPCK NIKTRSAQKR TNPKRV

## SEQ ID NO:9 CBK1 DNA SEQUENCE

10 Nucleic Acid Accession #: NM\_032391  
Coding sequence: 129-302 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
15 GTCTTCTCTC TCTAGCCTA AGGCGTGCAA ACAGAGCGCC ACTGGGAGGC TGAAACCTTT 60  
AGGCCGATGC TTGCTTGCAA GGTCAAGCAA GCTGGATTCT GGTCCCCACC TTTGCAGAGA 120  
GAACAGCGAT GTGTGCGGCC CATTTCTCAG ATCAAGGACC GGGCCATCTT ACTACCTCCA 180  
AGAGTCTCTT TCTCTCTAAT AAGAAAACAT CTACTTTGAA ACATCTACTG GCGGAGACCA 240  
GGAGTAGTGG CTCAGCCTGT AATTCTGGA TTTGGGGAGG CCGAGGCAGG AAGATTCTCT 300  
20 GAGCACAGGA GTTCCAGACC AGCCTGGGCA ATGTAGCAAG ACGCTGTCTC TATTATACA 360  
ATAAAATTTT TTTAAAAAG G

25 SEQ ID NO:10 CBK1 Protein sequence:  
Protein Accession #: NP\_115767

30 1 11 21 31 41 51  
MLCAHFSDDQ PAHLTTSKSA FLSNKKSTL KHLLOETRS DGSACNSGISG GRGRKIP

## SEQ ID NO:11 CHA1 DNA SEQUENCE

35 Nucleic Acid Accession #: NM\_020182  
Coding sequence: 98-854 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
40 TCCTTGGGTT CGGGTGAAAG CGCCTGGGGG TCGTGCCCA TGATCCCCGA GCTGCTGGAG 60  
AACTGAAGGC GGACAGTCTC CTGCGAAACC AGGCAATGGC GGAGCTGGAG TTTGTTTACA 120  
TCATCATCAT CGTGGTGGTG ATGATGGTGA TGGTGGTGGT GATCAGTGC CTGCTGAGCC 180  
ACTACAGCT GTCTGCACGG TCCTTCATCA GCGCGCACAG CCGGGGCGCG AGGAGAGAAG 240  
ATGCCCTGTC CTCAGAAGGA TGCCCTGTGC CCTCGGAGAG CACAGTGTCA GGCACCGGAA 300  
45 TCCAGAGGCC GCAGGTCTAC GCGCCGCTC GCGCCACGGA CCGCTGGCC GTGCCGCCCT 360  
TGCCGACGG GGAGCGCTTC CACCGCTTCC AGCCCACTA TCCGTACCTG CAGCAGAGA 420  
TGAGACTGCC ACCCACCATC TCGCTGTGAG ACGGGGAGGA GCGCCACCC TACCAGGGCC 480  
CCTGACCTCT CCAGCTTCGG GACCCGAGC AGCAGCTGGA ACTGAACCGG GAGTCGGTGC 540  
GCGCACCCCC AACACAGAACC ATCTTCGACA GTGACTGAT GGATAGTCC AGGCTGGCGC 600  
50 GCGCTGCCCC CCCCAGCAGT AACTCGGGCA TCAGCGCCAC GTGCTACGGC AGCGGGCGGC 660  
GCATGGAGGG GCGGCCGCC ACCTACAGCG AGGTATCTGG CCACTACCCG GGGTCTCTCT 720  
TCCAGCACCA GCAGAGCAGT GGGCGGCCCT CCTGTCTGGA GGGGACCCGG TCCACCACA 780  
CACACATGCG GCGCTAGAG AGCGCAGCCA TCTGGAGCAA AGAGAGGAT AAACAGAAAG 840  
GACACCTCT CTAGGGTCCC CAGGGGGGCC GGGCTGGGGC TCGTAGGTG AAAAGSCAGA 900  
55 ACACCTCCCG CTCTTTAGAA GAGGAGTGAG AGGAAGCGCG GGGGCCGAGC AACGCATCGT 960  
GTGGCCCTCC CTTCCACCT CCGTGTGTAT AATATTTAC ATGTGATGTC TGGTCTGAAT 1020  
GCACAGCTA AGAGAGCTTG CAAAAAAGAA AAGAAAAAAG AAAAAAAGAA ACCAGTTTC 1080  
TTTGTGTAGC TGTGTCTTGA AGGCAAAAGA AAAAAAATTT CTACAGTAAA AAAAAAAGAA 1140  
A

60 SEQ ID NO:12 CHA1 Protein sequence:  
Protein Accession #: NP\_064567

65 1 11 21 31 41 51  
MAELEFVQII IIVVVMVMV VVITCLLSHY KLSARSPISR HSQRRRREDA LSSEGCLWPS 60  
ESTVSGNGIP EPQVYAPRP TDLAVPFFA QRRPFRFPQ TYPYLQHEID LPPTISLSDG 120  
70 EEPFPYQGPC TLQLRDPBQQ LELNRESVRA PNRITIFSD LMSARLGGP CPFSNSGIS 180  
ATCYGSGGRM EGPPPTYSEV IGHYFGSSFQ HQQSSGPPSL LEGTRLHHTH IAPLESAAIW 240  
SKKDKQKQH PL

## SEQ ID NO:13 CIA5 DNA SEQUENCE

75 Nucleic Acid Accession #: NM\_012445  
Coding sequence: 276-1271 (underlined sequences correspond to start and stop codons)

80 1 11 21 31 41 51



5 GCACGAGGGA AGAGGGTGAT CCGACCCGGG GAAGGTGCGT GGGCAGGGCG AGTTGGGAAA 60  
 GCGGCAGCCC CGCCCGCCCC CGCAGCCCTT TCTCTCTCTT TCTCCACGT CCTATCTGCC 120  
 TCTCGCTGGA GCGCAGCCCG TGCACTATCG AAGACAGGAG GAACCTGGAGC CTCAATGGCC 180  
 GCGCCGGGGC GCGGCGCTCG GGCCTAAATA GGAGCTCCGG GCTCTGGCTG GACCCGACCC 240  
 GCTGCCGGCC GCGCTCCCGC TGCTCTCTGCC GGGTGATGGA AAACCCGAGC CCGGCGCGCG 300  
 CCTTGGGCAA GCGCTCTGTC GCTCTCTCTC TGGCCACTCT CGGCGCCGCC GGCAGGCTC 360  
 TTGGGGGAGA GTCCATCTGT TCCGCCAGAG CCGCGGCCAA ATACAGCATC ACCTTCACGG 420  
 GCAAGTTCAT GCGAGCCGCC TTCCCAAGC AGTACCCCTT GTTCCGCCCC CCTGCGCACT 480  
 GGTCTTCTGT GCTGGGGGCC GCGCATAGCT CCGACTACAG CATGTGGAGG AAGAACCAGT 540  
 10 ACGTCAGTAA CCGGCTCCGC GACTTTGCGG AGCGCGGCCA GGCCTGGGCG CTGATGAAGG 600  
 AGATCGAGGC GCGGGGGAGG GCGCTGCAGA GCGTGACGCG GGTGTCTTCG GCGCCCGCCG 660  
 TCCCGCAGCG CACCGGGCAG ACGTCGGCGG AGCTGGAGGT GCAGCGCAGG CACTCGCTGG 720  
 TCTCGTTTGT GGTGCGCATC GTGCCAGGCC CCGACTGGTT CGTGGGCGTG GACAGCCTGG 780  
 15 ACGTGTGCGA CCGGAGCCGT TGGCGGGAAC AGGCGGCGCT GGACCTGTAC CCTACGACG 840  
 CCGGGACGGA CAGCGGCTTC ACCTTCTCCT CCCCACACT CGCCACCATC CCGCAGGACA 900  
 CGGTGACCGA GATAACGTCC TCCTCTCCCA GCCACCCGGC CAACTCCTTC TACTACCCGC 960  
 GGCTGAAGGC CTGCTCTCC ATCGCCAGGG TGCACTGGT GCGGCTGCGA CAGAGCCCA 1020  
 GCGCCTTCAT CCTTCCCGCC CCAGTCTCTC CCAGCAGGGA CAATGAGATT GTAGCAGCG 1080  
 20 CCTCAGTTCC AGAAACCCCG CTGGACTGCG AGGTCTCCCT GTGCTCGCTG TGGGACTGT 1140  
 GCGGAGGCGA CTGTGGGAGG CTCGGGACCA AGAGCAGGAC TCGCTACGTC CCGGTCCAGC 1200  
 CCGCCACCAA CCGGAGCCCG TGCCCGGAGC TCGAAGAAGA GGCCTGAGTG GTCCCTGATA 1260  
 ACTGCGCTTA AGACAGAGC CCGCAGGCC CTGGGGCCCC CGGAGCCATG GGTGTGCGG 1320  
 GGCTCCTGTG CAGGCTCATG CTCAGGGCGG CCGAGGCACA GGGGTTTCG CGCTGCTCCT 1380  
 GACCCGGGTG AGGCGCGGCC GACCATCTCT GCATGAAGG GCGCTCTGT GCGCGGCACG 1440  
 25 GGCATGGGGA AACAGCCCTC TCCTTTCCCA ACCTTGCTTC TTAGGGGCCC CCGTGTCCCG 1500  
 TCTGCTCTCA GCTCTCTCT CCGCAGGAT AAGTTCATCC CCAAGGCTCC AGCTACTCTA 1560  
 AATTATGTG TCCTTATAAG TTATTCCTGC TCCAGGAGT TGTCTCTCAT COTCCAGGG 1620  
 CCTGCTCCC ACGTGTGTGC AGATACCTCA GACCTGGTGC TCTAGGCTGT GCTAGGCCA 1680  
 30 CTCTCCCGAG GCGCATCCA AGCGGGGCC ACTTGAGAAG TGAATAAAT GGGCGGTTC 1740  
 GGAAGCGTCA GTGTTTCCAT GTTATGGATC TCTCTGCGTT TGAATAAAGA CTATCTCTGT 1800  
 TGCTCAC

35 SEQ ID NO:14 CJA5 Protein sequence:  
 Protein Accession #: NP\_035577

1 11 21 31 41 51  
 40 MENPSPAAL GRALCALLLA TLGAAGQPLG GESICSARAP AKYSTITPTGK WSQTAFPRQY 60  
 PLFRPFAQWS SLLGAHSSD YSMWRKNQYV SNGLRDPFAER GEAWALMKEL EAAGEALQSV 120  
 HAVFSPAAPV SGTGQTSARL EVQRRLSLVS FVVRIVPSPD WFGVDSLDL CDGDRWREQA 180  
 ALDLXPYDAG TDSGFTTSSP NFATIPQDTV TEITSSSPSH PANSFYYPRL KALPPIARVT 240  
 45 LVRLRQSFRA FIPPAFVLPS RDNEIVDSAS VPETPLDCEV SLWSSWGLCG GHCGRLGTKE 300  
 RTRYVRVQFA NNGSPCFELE EEPVCVFNK V

# SEQ ID NO:15 LBH9 DNA SEQUENCE

50 Nucleic Acid Accession #: NM\_002391  
 Coding sequence: 26-457 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
 55 CGGGCGAAGC AGCGCGGGCA GCGAGATGCA GCACCGAGGC TTCTCTCTCC TCACCTCTCT 60  
 CGCCCTCTGT GCGCTCACTC CCGCGGTGCG CAAAAGAGAA GATAAGGTGA AGAAGGCGCG 120  
 CCGCGGGAGC GAGTGGCGCTG AGTGGGCTCG GGGGCGCTCG ACCCCAGCA GCAAGGATTG 180  
 CCGCGTGGGT TTCCGCGAGG GCACCTGCGG GCGCCAGACC CAGCGCATCC GGTGCAAGGT 240  
 GCGCTGCAAC TGGGAAGAAG AGTTTGGAGC CGACTGCAAG TACAAGTTTG AGAAGTGGGG 300  
 60 TGCGTGTGAT GGGGGCAGAG GCACCAAGT CCGCCAAGGC ACCCTGAAGA AGGCGCGCTA 360  
 CAATGCTCAG TGCCAGGAGA CCATCCGCGT CACCAAGGCC TGCAACCCCA AGACCAAGGC 420  
 AAAGGCCAAA GCCAAGAAG GGAAGGGAAG GCACTAGACG CCAAGCCTGG ATGCCAAGGA 480  
 GCGCCTGGTG TCACATGGGG CCGGGCCACG CCTTCTCTCT CCCAGGCGCG AGATGTGACC 540  
 CACCAAGTGC TTCTGTCTGC TCGTTAGCTT TAATCAATCA TGCCCTGCTT TGTCTCTCTC 600  
 65 ACTCCCCAGC CCCACCCCTA AGTGCCCAA GTGGGGAGGG ACAAGGGATT TGGGGAAGCT 660  
 TGAGCCTCCC CCAAAGCAAT GTGAGTCCCA GAGCCCGCTT TTGTCTCTCC CCACAATTCC 720  
 ATTACTAAGA AACACATCAA ATAACTGAC TTTTTCCTCC CAATAAAGC TCTTCTTTT 780  
 TAATAT

70 SEQ ID NO:16 LBH9 Protein sequence:  
 Protein Accession #: NP\_002382

1 11 21 31 41 51  
 75 MQHRGFLLLT LLALLAL TSA VAKKKDKVKK GPGSECAEW AWGPCTPSSK DGVGFREGT 60  
 CGAQTRIRK RVPENWKEF GADCKYKFEN WGACDGGTGT KVRQGTLLKA RYNAQCQETI 120  
 RVTKECTPKT KAKAKAKGK GKD

## SEQ ID NO:17 LEM9 DNA SEQUENCE

Nucleic Acid Accession #: NM\_005244

Coding sequence: 1-1617 (underlined sequences correspond to start and stop codons)

5  
10  
15  
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25  
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1	11	21	31	41	51	
ATGOTAGAAC	TAGTGATCTC	ACCCAGCCTC	ACTGTAAACA	GCGATTGTCT	GGATAAACTG	60
AAGTTTAAAC	GTGCTGACGC	TGCTGTGTGG	ACTCTGAGTG	ACAGACAAGG	CATCACCAAA	120
TCGGCCCCC	TGAGAGTGTG	CCAGCTCTTC	TCAGATCTT	GCCACGTTG	CCTCCCCCGC	180
CAGCCTTCCA	CAGCCATGGC	AGCCTACGGC	CAGACGCAGT	ACAGTCCGGG	GATCCAGCAG	240
GCTACCCCT	ATACAGCTTA	CCCACTCCA	GCACAAGCCT	ATGGAATCCC	TTCTTACAGC	300
ATCAAGACAG	AAGACAGCTT	GAACCATTC	CCTGGCCAGA	GTGGATTCTT	CAGCTATGGC	360
TCACGCTTCA	GCACCTCACC	CACTGGACAG	AGCCCATACA	CCTACCAGAT	GCACGGCACA	420
ACAGGGTTCT	ATCAAGGAGG	AAATGGACTG	GGCAACGCAG	CCGGTTTCGG	GAGTGTGCAC	480
CAGGACTATC	CTTCTTACCC	CGGCTTCGCC	CAGAGCCAGT	ACCCCCAGTA	TTACGGCTCA	540
TCCTTACAAC	CTCCCTAGCT	CCCGGCCAGC	AGCATCTGCC	CTTCGCCCCCT	CTCCACGTCC	600
ACCTTACGTCC	TCCAGGAGGC	ATCTCACAA	GTCCCCAACC	AGAGTTCGGA	GTCACTTGCT	660
GGTGAATACA	ACACACACAA	TGGACCTTCC	ACACCAGCGA	AAGAGSGAGA	CACAGACAGG	720
CCGCACCGGG	CCTCCGACGG	GAAGCTCCGA	GGCCGGTCTA	AGAGGAGCAG	TGACCCGTCC	780
CCGGCAGGGG	ACAAATGAGAT	TGAGCGTGTG	TTGGTGTGGG	ACTTGGATGA	GACAATAATT	840
ATTTTTCAGT	CCTTACTCAC	GGGGACATTT	GCATCCAGAT	ACGGGAAGGA	CACCAACGAG	900
TCCGTAGCTCA	TCCCAAAAG	GATGGAAGAG	ATGATCTTCA	ACCTTGCAGA	TACACATCTG	960
TTCTTTCAATG	ACCTGGAGGA	TTGTGACCAG	ATCCACGTTC	ATGACGTCTC	ATCAGATGAC	1020
AATGGCCAAG	ATTTAAGCAC	ATACAACTTC	TCCGCTGACG	GCTTCCACAG	TTCCGGCCCCA	1080
GGAGCCAACC	TGTGCTTGGG	CTCTGCGCTG	CACGGCCGGG	TGGACTGGAT	GAGGAAGCTG	1140
GCCTTCCGCT	ACCGGCGGGT	GAAGGAGATG	TACAATACCT	ACAAGAACAA	CGTTGGTGGG	1200
TTGATAGGCA	CTCCCAAAAG	GGAGACCTGG	CTACAGCTCC	GAGCTGAGCT	GGAACTCTCT	1260
ACAGACCTCT	GGCTGACCCA	CTCCCTGAAG	GCATTAACCC	TCATCAACTC	CCGGCCCAAC	1320
TGTGTCAATG	TGCTGGTCC	CACCACTCAA	CTAATTCCTG	CCCTGGCCAA	AGTCTGTGTA	1380
TATGGCTCGG	GGTCTGTGTT	TCCTATTGAG	AACATCTACA	GTGCAACCAA	GACAGGGAGG	1440
GAGAGCTGCT	TCGAGAGGAT	AATGCAGAGA	TTCCGCAGAA	AAGCTGTCTA	CCTGGTGTATC	1500
GGTGAATGGT	TGGAAGAGGA	GCAAGGAGCG	AAAAAGCACA	ACATGCCCTT	CTGGCGGATA	1560
TCCTGCCAAG	CAGACCTGGA	GGCACTGAGG	CAAGCCCTGG	AACCTGGAGTA	TTTATAG	

SEQ ID NO:18 LEM9 Protein sequence:

Protein Accession #: NP\_005235

40  
45  
50

1	11	21	31	41	51	
MVELVISPSL	TVNSDCLDKL	KFNRAAIVW	TLSDRQGITK	SAPLRVSQLP	SRSCPVLPR	60
QPSTAMAYQ	QTQYSAGIQQ	ATPYTAYPPP	AQAYGIPSY	IKTEDIANHS	PQSGFLSYG	120
SSPSTSPFQ	SPFTYQMHGT	TGFTYQGNGL	GNAAGFVS	QDYPSPYFP	QSQYPQYYS	180
SYNPPVPAS	SCIPSPLETS	TYVLQEAH	VFNQSSSLA	GEYNTHNGPS	TPAKBGDTDR	240
PERASDGKLR	GRSKRSSDPS	PAGDNEIERV	FVMDLDEIT	IFHSLLTGTF	ASRYGKDTT	300
SVRGLAMEE	MIFNLADTHL	FFNDLEDQD	IHDVDSDD	NGQDLSTYNF	SADGFHSSAP	360
GANLCGSGV	BGGVDMMRKL	APRYRRVKEM	YNTYKNNVGG	LIGTPKRETW	LQRAELREAL	420
TDIMLTHSLK	ALNLIINSRPN	CVMVLVTTTQ	LIPALAKVLL	YGLGSVPPIE	NIYSATETGK	480
ESCTERIMQR	FGKRVYVVI	GDGVEEQGA	KRHNMPFWRI	SCHADLEALR	HALELEYL	

## SEQ ID NO:19 OAA1 DNA SEQUENCE

Nucleic Acid Accession #: NM\_002740

Coding sequence: 178-1968 (underlined sequences correspond to start and stop codons)

55  
60  
65  
70  
75  
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1	11	21	31	41	51	
CCGCGGTTCC	GGCTGCTCCG	CGCAGGCGAC	CCTTGGGTCC	GCGCTGCGGG	CGAGGTGGGC	60
AGGTAGGTGG	GCGGACGGCC	GCGGTTCTCC	GGCAAGCGCA	GGCGGCGGAG	TCCCCACGG	120
CGCCCGAAGC	GCCCCCGCA	CCCCCGGCTT	CCAGCCTTGA	GCGGGGGAG	TGAGGAGATG	180
CCGACCCAGA	GGGACAGCAG	CACCATGTCC	CACACGGTCG	CAGGCGGCGG	CAGCGGGGAC	240
CATTCCCACC	AGGTCCGGGT	GAAAGCCTAC	TACCGCGGGG	ATATCATGAT	AACACATTTT	300
GAACCTTCCA	TCTCTCTTGA	GGGCTTTG	AATGAGGTTT	GAGACATGTG	TTCTTTTGAC	360
AACGAACAGC	TCTTCAACAT	GAAATGATA	GATGAGGAAG	GAGACCCGTG	TACAGTATCA	420
TCTCAGTTGG	AGCCTTTAGA	CTTTATGAGC	TAAACAAGGA	TTCTGAACTC		480
TTGATTCATG	TGTTCCCTTG	TGTACCAAG	CGTCTGGGA	TGCTTGTCC	AGGAGAAGAT	540
AAATCCATCT	ACCGTAGAGG	TGCACGCGCG	TGGAGAAAGC	TTTATTGTGC	CAATGGCCAC	600
ACTTCCCAAG	CCAAGCGTTT	CAACAGGCGT	GCTCACTGTG	CCATCTGCAC	AGACCGAATA	660
TGGGACTCTG	GACGCCAAGG	ATATAAGTGC	ATCAACTGCA	AACTCTTGTT	TCATAAGAAG	720
TGCCATAAAC	TCGTCACAAT	TGAATGTGGG	CGGCATTCTT	TGCCACAGGA	ACCAGTATG	780
CCCATGGATC	AGTCATCCAT	GCATTCAGAC	CATGCACAGA	CAGTAATTC	ATATAATCCT	840
TCAAGTCTATG	AGAGTTTGG	TCAAGTTGGT	GAAGAAAAAG	AGGCAATGAA	CACGAGGGAA	900
AGTGCAAAAG	CTTCATCCAG	TCTAGGTCTT	CAGGATTTTG	ATTGTGCTCC	GGTAAATAGGA	960
AGAGGAAGTT	ATGCCAAAGT	ACTGTGTTGT	CGATTAAAAA	AAACAGATCG	TATTTATGCA	1020
ATGAAGATTG	TGAAAAAAGA	GCTTGTTAAT	GATGATGAGG	ATATTGATTG	GGTACAGAGA	1080
GAGAAGCATG	TGTTTGAGCA	GGCATCCAAT	CATCTTTTCC	TTGTGGGCT	GCATTCCTG	1140
TTTCAGACAG	AAAGCAGATT	GTTCCTTGT	ATAGAGTATG	TAAATGGAGG	AGACCTAATG	1200
TTTCATATGC	AGCGACAAAG	AAAACCTCT	GAAGAACATG	CCAGATTMTA	CTCTGCAGAA	1260

5 ATCAGTCTAG CATTAAATTA TCTTCATGAG CGAGGGATAA TTTATAGAGA TTTGAAACTG 1320  
 GACAATGTAT TACTGGACTC TGAAGGCCAC ATTAAGCTCA CTGACTACGG CATGTGTAAG 1380  
 GAAGGATAC GGCCAGGAGA TACAACGAGC ACTTTCGTGT GTACTCCTAA TTACATTGCT 1440  
 CCTGAAATTT TAAGAGGAGA AGATTATGGT TTCAGTGTG ACTGGTGGG TCTTGGAGTG 1500  
 CTCAATGTTG AGATGATGGC AGGAAGGTCT CCATTGATA TTGTTGGGAG CTCGGATAAC 1560  
 CCTGACCAGA ACACAGAGGA TTATCTCTTC CAAGTTATTT TGGAAAAACA AATTCCGATA 1620  
 CCACGTCTCT TGTCTGTAAA AGCTGCAAGT GTTCTGAAGA GTTTTCTTAA TAAGGACCCT 1680  
 AAGGAACGAT TGGGTGTCA TCCTCAAAACA GGATTGTCTG ATATTTCAGGG ACACCCGTTT 1740  
 10 TTCCGAAATG TTGATTGGGA TATGATGGAG CAAAAACAGG TGGTACCTCC CTTTAAACCA 1800  
 AATATTCTCT GGGAAATTGG TTTGGACAAC TTTGATTCTC AGTTTACTAA TGAACCTGTC 1860  
 CAGCTCACCT CAGATGACGA TGACATTGTG AGGAAGATTG ATCAGTCTGA ATTTGAAGGT 1920  
 TTTGAGTATA TCAATCTCTT TTTGATGTCT GCAGAAGAAT GTGTCTGATC CTCATTTTTC 1980  
 AACCATGTAT TCTACTCATG TTGCCATTTA ATGCATGGAT AAACCTGCTG CAAGCCTGGA 2040  
 15 TACAATTAA CATTTTATAT TTGCCACCTA CAAAAAACA CCCAATATCT TCTCTGTAGT 2100  
 ACTATATAT TCAATTATTA CATCTGTTT ACTATGAAA AAAAAATTAAT ACTACTAGCT 2160  
 TCAGACAAAT CATGTCAAAA TTTAGTTGAA CTGGTTTTC AGTTTTTAAA AGGCCTACAG 2220  
 ATGAGTAATG AAGTTACCTT TTTTGTTTAA AAAAAAAGA G

20 SEQ ID NO:20 QAA1 Protein sequence:  
 Protein Accession #: NP\_002731

25 1 11 21 31 41 51  
 MSHTVAGGGS GDHSHQVRVK AYYRGDIMIT HPEPSISFEG LCNEVRDMCS PDNEQLFTMK 60  
 WIDEEDPCT VSSQLELEEA FRLYELNKDS ELLIHVFCV PERPGMPCPG EDKSIYRGA 120  
 RRMKLYCAN GHTFQAKRPN RRAHCAICTD RINGLGRQGY KCINCKLHV KKCHKLVTE 180  
 CGRHSLPQBP VMPDQSSMH SDHAQTVIY NPSSHESLDQ VGEZEAMVT RESGKASSSL 240  
 30 GLQDPDLLRV IGRGSYARVL LVRLKKTDR IYAMVVKEL VNDDEDIDW QTEKHVFQA 300  
 SNHPFVLGLH SCFQTESRLF FVIEYVNGGD LMFHMQRQRK LPFEHARFYS AEISLALNYL 360  
 HERGIYRDL KLNVLVDLSE GHIKLTIDYGM KEBGLRPGDT TSTFCSTFNY IAPFILRGED 420  
 YGFSEVDWAL GVLMFEMHAG RSPFDIVGSS DNPQDNTEDY LPQVILEKQI RIPRSLSVKA 480  
 ASVLKSLFNK DPKERLGHCP QTGFADIQGH PFRNVDMDM MBQKQVPPP KPNISGEPL 540  
 35 DNFDSQFTNE FVQLTFDDDD IVRKIDQSEF EGFEYNPLL MSAECV

## SEQ ID NO:21 O8H2 DNA SEQUENCE

40 Nucleic Acid Accession #: L05628  
 Coding sequence: 197-4782 (underlined sequences correspond to start and stop codons)

45 1 11 21 31 41 51  
 CCAGCGCGCGG TTGCGGCGCC GCGCGCGGCT CCCTGCGCGG CCGCGCGCGG CGCGCGCGCC 60  
 GCCCGCGCGG CCGCGCGCGG CGCTAGCGCC AGCAGCGCGG CCGGATCACC CGCGCGCGCG 120  
 TGCCCGCGCG CCGCGCGCGG AGCAACCGGG CCGGATCACC CGCGCGCGCG TGCCCGCGCG 180  
 CGCCCGCGCG ACCCGCATGG CGCTCGCGGG CTCTCGCAGC GCGGATGGCT CCGACCGCGT 240  
 CTGGGACTGG AATGTCAAGT GGAATACCAAG CAACCCCGAC TTCAACCAAGT GCTTTCAGAA 300  
 CACGGTCTCT GGTGCGGTGC CTGTGTTTGA CCTCTGGGCG TGTTCGCCCT TCTACTTCTC 360  
 50 CTATCTCTCC CGACATGACC GAGGCTACAT TCAGATGACA CCTCTCAACA AARCCAAAAC 420  
 TGCCCTGGGA TTTTGTCTGT GGAATCGTCTG CTGGGCAGAC CTCTCTTACT CTTTCCTGGA 480  
 AAGAAGTCGG GGCATATTCG TGGCCCCAGT GTTCTGTGTC AGCCCAACTC TCTTGGGCAT 540  
 CACCAGCGTG CTGTCTACCT TTTTAATTCA GCTGGAGAGG AGGAAGGGAG TTAGACTCTC 600  
 AGGGAATATG CTCACCTTCT GCGTGTAGC CCTAGTGTGT GGCCTAGCCA TCCTGAGATC 660  
 55 CAAATATATG ACAGCTTAA AAGAGGATGC CCAGGTGGAC CTGTTCCTGT ACATCACTTT 720  
 CTAGCTCTAC TTTTCCCTCT TACTCATTTCA CCTGCTCTTG TCCGTCTTCT CAGATCGCTC 780  
 ACCCCTGCTC TCGGAAACCA TCCACGACCC TAATCCCTGC CCAGAGTCCA GCGCTTCTCT 840  
 CCTGTGAGG ATCACCTTCT GGTGGATCAC AGGTTTGATT GTCCGGGGCT ACCGCCAGCC 900  
 60 CTTGGAGGGC AGTGACCTCT GGTCTTTAAA CAAGGAGGAC ACGTCGGAAC AAGTCGTGCC 960  
 TGTATTGTTA AAGAAGTGA AAGAAGAAAT CGCCAGACT AGGAAGCAGC CGGTGAAGGT 1020  
 TGTGTACTCC TCCAAGGATC CTGCCAGCC GAAAGAGAGT TCCAAGGTGG ATGCGAATGA 1080  
 GGAGGTGGAG GCTTTGATCG TCAAGTCCCC ACAGAAGGAG TGGAAACCTT CTCTGTTTAA 1140  
 GGTGTTATAC AAGACCTTGT GGCCTTACTT CCTCATGAGC TTCTTCTTCA AGGCCATCCA 1200  
 65 CGACCTGATG ATGTTTTCG GGCDCGAGAT CTTAAGATTG CTCATCAAGT TCGTGAATGA 1260  
 CACGAAGGCC CCAGACTGGC AGGCTACTTT CTACACCGTG CTGCTGTTTG TCACTGCCCT 1320  
 CCTGCAGACC CTCGTGCTGC ACCAGTACTT CCACATCTGC TTGCTCACTG GCATGAGGAT 1380  
 CAAGACCGCT GTCAATTGGG CTGTCTATCG GAAGGCCCTG GTGATCACA ATTACGACCAG 1440  
 70 AAAATCTTCC ACGGTCCGGG AGATTGTCAA CTCATGTCT GTGGAAGCTC AGAGGTTCAT 1500  
 GGACTTGGCC ACGTACATTA ACATGATCTG GTACGCCCTC CTGCAAGTCA TCTTGTCTCT 1560  
 CTACCTTCTG TGGCTGAATC TGGGCCCTTC CTCTCTGCTG GGAGTGCGCG TGATGTCTCT 1620  
 CATGTGTCCT GATGTCGCTG TGATGGCGAT GAAGACCAAG ACGTATCAGG TGGCCACAT 1680  
 GAAGAGCAAA GACAAATGGA TCAAGCTGAT GAACGAAATT CTCAATGGGA TCAAGTGCT 1740  
 AAAGCTTTAT GCCTGGGAGC TGGCATTTCA GGACAAGGTG CTGCGCATCA GGCAGGAGGA 1800  
 75 GCTGAAGGTG CTGAAGAAAT CTGCTACCT GTACGCCCTG GGCACCTTCA CCTGGGTCTG 1860  
 CACGCCCTTT CTGCTGCTCT TGTGCACATT TGCCGTCTAC GTGACCATG ACGAGAACAA 1920  
 CATCTGATG GCCCAGACAG CTTCTGTGTC TTTGGCCTTG TTCAACATCC TCGGTTTTC 1980  
 CCTGAACATT CTCCCATATG TCATCAGCAG CATCTGTGAG GCGAGTGTCT CCTTCAACG 2040  
 CCTGAGATC TTTCTCTCCC ATGAGGAGCT GGAACCTGAC AGCATCGAGC GACGGCTGT 2100  
 80 CAAGACGGC GGGGGCACA ACAGCATCAC CGTGAGGAAT GCCCATTTCA CCTGGGCCAG 2160  
 GAGCGACCT CCCACACTGA ATGGCATCAC CTTCTCCATC CCGAAGGTG CTTTGTGTGC 2220

5	CGTGGTGGGC	CAGGTGGGCT	GCGGAAAGTC	GTCCCTGGCT	TCAGCCCTCT	TGGCTGAGAT	2280
	GGACAAAGTG	GAGGGGCACG	TGGCTATCAA	GGGCTCCGTC	GCCTATGTGC	CACAGCAGGC	2340
	CTGGATTACAG	AATGATTCTC	TCCGAGAAAA	CATCCTTTTT	GGATGTGACG	TGGAGGAACC	2400
	ATATTACAGG	TCCGTGATAC	AGGCGTGTGC	CCTCCTCCCA	GACCTGGAAA	TCTTCGCCAG	2460
	TGGGGATCGG	ACAGAGATTG	GCGAGAAGGG	CGTGAACCTG	TCTGGGGGCC	AGAAGCAGCG	2520
	CGTGAGCCCTG	GCCCCGGCCG	TGTACTCCAA	CGCTGACATT	TACCTCTTCG	ATGATCCCTT	2580
	CTCAGCAGTG	GATGCCCATG	TGGGAAAACA	CATCTTTGAA	AATGTGATTG	GCCTCAAGGG	2640
	GATGCTGAAG	AACAAGACCG	GGATCTTGGT	CACGCACAGC	ATGAGCTACT	TGCCCGAGGT	2700
10	GGACGTCATC	ATCGTCATGA	GTGGCGGCAA	GATCTCTGAG	ATGGGCTCCT	ACCAGGAGCT	2760
	GCTGGCTCGA	GACGGCGCCT	TCCGTGAGTT	CCTGGCTACC	TATGCCAGCA	CAGAGCAGGA	2820
	GCAGGATGCA	GAGGAGAAGC	GGGTACAGGG	CGTCAGCGGT	CCAGGGAAGG	AAGCAAAGCA	2880
	AATGGAGATT	GGCATGTCTG	TGACGGACAG	TGCAGGGAAG	CAACTGCAGA	GACAGCTCAG	2940
	CAGCTCCTTC	TCTTATAGTG	GGGACATCAG	CAGGCACCAC	AACAGCACCG	CAGAAGCTCA	3000
	GAAAGCTCAG	GCCAAGAAAG	AGGAGACCTG	GAAGCTGATG	GAGGCTGACA	AGGCGCAGAC	3060
15	AGGGCAGGTG	AAGCTTTCCG	TGTACTGGGA	CTACATGAAG	GCCATCGGAC	TCTTCATCTC	3120
	CTTCTCTCAGC	ATCTTCTCTT	TCAATGTGTA	CCATGTGTCC	GCGCTGGCTT	CCAATATTG	3180
	GCTCAGCCCTC	TGGACTGATG	ACCCCATCGT	CAACGGGACT	CAGGAGCACA	CGAAAGTCCG	3240
	GCTGAGCGTC	TATGGAGCCC	TGGGCATTTC	ACAAGGGATC	GCCGTGTTTG	GCTACTCCAT	3300
	GGCCGTCTCG	ATCGGGGGGA	TCTTGGCTTC	CCGCTGTCTG	CACGTGGACC	TGCTGCACAG	3360
20	CATCTCTGCG	TACCCCATGA	GCTTCTTTGA	GCGGACCCCC	AGTGGGAACC	TGGTGAACCG	3420
	CTTCTCCCAAG	GAGCTGGACA	CAGTGGAGTC	CATGATCCCG	GAGGTTCATC	AGATGTTTCAT	3480
	GGGCTCCCTG	TCTAACGCTC	TTGGTGCCCTG	CATCGTTATC	CTGCTGGGCA	CGCCCATCGC	3540
	CGCCATCATC	ATCCCGCCCC	TTGGGCTCAT	CTACTTCTTC	GTCCAGAGGT	TCTACGTGGC	3600
25	TTCTCCCTCG	CAGCTGAAGC	GCCTCGAGTC	GGTCAGCCGC	TCCCGGCTCT	ATTCCCATTT	3660
	CAACGAGACC	TTCGTGGGGG	TCAGCGTCAT	TCGAGCCTTC	GAGGAGCAGG	AGCGCTTCAT	3720
	CCACGAGAGT	GACCTGAAGG	TGGACGAGAA	CCAGAAGGCC	TATTAACCCA	GCATCGTGGC	3780
	CAACAGGTGG	CTGGCCGCTG	GGCTGGAGTG	TGTGGGCAAC	TGCATCGTTC	TGTTGCTGTC	3840
	CCTGTTTGGC	GTGATCTCCA	GGCACAGCCT	CAGTGTCTGC	TTGGTGGGCC	TCTCAGTGTG	3900
30	TTACTCATTT	CAGGTCAACA	CGTACTTGAA	CTGGCTGGTT	CGGATGTCTC	CTGAATGGA	3960
	AACCAACATC	GTGGCCGTGG	AGAGGCTCAA	GGAGTATTCA	GAGACTGAGA	AGGAGGCCGC	4020
	CTGGCAAAAT	CAGGAGACAG	CTCCGCCAGC	CAGCTGGCCC	CAGGTGGGCC	GAGTGAATTT	4080
	CCGGAACCTG	TCCCTGCGCT	ACCGAGAGGA	CCTGCACTTC	GTCTCTCAGC	ACATCAATGT	4140
	CACGATCATC	GGGGGAGAAA	AGGTGCGCAT	CGTGGGGCGG	ACGGGAGCTG	GGAAGTCCGT	4200
35	CCTGACCCCTG	GGCTTATTTT	GGATCAACGA	GTCTCCGGA	GGAGAGATCA	TCATCGATGG	4260
	CATCAACATC	GCCAAGATCG	GCCTGCACGA	CCTCCGCTTC	AAGATCACCA	TCATCCCCCA	4320
	GGACCCGTGT	TTGTTTTCGG	GTCCCTCCCG	AATGAACCTG	GACCCATTCA	GCCAGTACTC	4380
	GGATGAAGAA	GTCTGGAGCT	CCCTGGAGCT	GGCCCACTCG	AAGGACTTCG	TGTCAGCCCT	4440
	TCCTGACAA	CTAGACCATG	AATGTGCAGA	AGGGGGGGAG	AACCTCAGTG	TGGGGCAGCG	4500
40	CCAGCTTGTG	TGCCTAGCCC	GGGCCCTGCT	GAGGAAGACG	AAGATCCCTG	TGTTGGATGA	4560
	GGCCACGGCA	GGCTGGAGCC	TGGAAACGGA	CGACCTCATC	CAGTCCACCA	TCCGGACACA	4620
	GTTCGAGGAC	TCCACCGTCC	TCACCATCGC	CCACCGGCTC	AACACCATCA	TGGACTACAC	4680
	AAGGGTGATC	GTCTTGGACA	AAGGAGAAAT	CCAGGAGTAC	GGCGCCCAT	CGGACCTCCT	4740
	GCAGCAGAGA	GGCTTTTCTT	ACAGCATGGC	CRAAGAGGCC	GGCTTGGTGT	GAGCCCCAGA	4800
45	CTGTGCATAT	CTGGTCAGAA	CTGCAGGGCC	TATATGCCAG	CGCCACGGGA	GGAGTCAGTA	4860
	CCCTCTGTAA	ACCAAGCCTC	CCACACTGAA	ACCAAAACAT	AAAAACCAAA	CCCAGACAAC	4920
	CAAAACATAT	TCAAAGCAGC	AGCCACCGCC	ATCCGCTCCC	CTGCTGGAAA	CTGGCTGTGA	4980
	AGACCCAGGA	GAGACAGAGA	TGCGAACCAC	C			
50	SEQ ID NO:22 OAH2 Protein sequence						
	Protein Accession #: AAB46618						
	1	11	21	31	41	51	
55	MALRGFCSAD	GSDPLMDWNV	TWNTSNPDFT	KCFQNTVLVW	VPCFYLMWCF	PPYFLYLSRH	60
	DRGYIQMTPL	NKTKTALGFL	LWIVCMADLF	YSFWERSRGI	FLAPVFLVSP	TLLGITITLLA	120
	TFLLIQLERRK	GVQSSGIMLT	FWLVALVCAL	AIIRSKIMTA	LKEDAQVDLF	RDITFYVYFS	180
	LLLIQLVLSC	FSDRSPLPSE	TIHDPNPCPE	SSASPLSRIT	FWMITGLIVR	GVRQPLEGSD	240
60	LMSLAKEDTS	BQVVFVLVKN	WKKECAKTRK	QPVKVYVSSK	DPAQPKESKX	VDANEEVEAL	300
	IVKSPQKEMN	PSLFKVLVYK	FGPYFLMSFF	FKAIHDLMP	SGPQILKLLI	KFVNDTKAPD	360
	WQGYFYTVLL	FVTACLQTLV	LHQYFHICPV	SGMRIKTAVI	GAVYRKALVI	TNSARKSSTV	420
	GEIVNLMSVD	AQRFMDLATY	INMIWSAPLQ	VILALYLLML	NLGPVSLAGV	AVMVLNVFVN	480
	AVMAMKTKTY	QVAMKSKDN	RIKLMMNEILN	GIKVLKLYAW	ELAFKDKVLA	IRQEELKVLK	540
65	KSAYLSAVGT	FTWVCTFPLV	ALCTFAVYVT	IDENNILDAQ	TAFVSLALEFN	ILRFPPLNLP	600
	MVSIIVQAS	VSLKRLRIPL	SHEELEPDSI	ERRPVKDGCG	TNSITVRNAT	FTWARSDFPT	660
	LNGITFSIPE	GALVAVVGQV	GCGKSSLLSA	LLAEMDKVEG	HVAIKGSVAY	VPQQAHIQND	720
	SLRENILFGC	QLEBPYRSV	IQACALLPDL	EILPSGDRTE	IGEGVNLNSG	GQKQVSLAR	780
	AVYSNADIYL	PDDLPSAVDA	HVGKHIFENV	IGPKGMLKNK	TRILLVTHSM	YLFQVDVIV	840
70	MSGGKISEMG	SYQELLARDG	APAEFLRTYA	STEQBQDAEE	NGVTGVSFGP	KEAKQWENGM	900
	LVTDSAGKQL	ORQLSSSSSY	SGDISRHNS	TAELOKAEAK	KEBTWKLMEA	DKAQTGQVKL	960
	SUYWDMKAI	GLFISPLSIF	LPMCNRHSAL	ASNYWLSMT	DDPIVNGTQE	HTKVRLSVYG	1020
	ALGISQGIIV	PGYSMAVSIG	GILASRCLHV	DLHLSILRSP	MSFFERTFSG	NLVNRPFSKL	1080
	DTVDSMPEV	IKMFMGLSFLN	VIGACIVILL	ATPIAAIIP	PLGLIYFFVQ	RDFYVASSRQL	1140
	KRLSEVSRSE	VYSHFNETLL	GVSVIRAFEE	QERPIHQSDL	KVDENQKAYY	PSIVANRWLA	1200
75	VRLECVNCT	VLPAAALFAVI	SRHSLSAGLV	GLSVSYSLQV	TTYLNLWVRM	SSEMETNIVA	1260
	VERLKEYSET	EKEAPWQIQE	TAPPSWSPQV	GRVEFRNYCL	RYREDLDFVL	RHLNVTINGG	1320
	EKVGVGRTG	AGKSSLTLGL	FRINESAEGE	IIIDGINIAK	IGLEDLRFKI	TIIPQDFVLV	1380
	SGSLRMLNDP	FSQYSDEEIVW	TSLELAHLKD	FVSALPDKLD	HECAEGGENL	SVGQRQLVCL	1440
80	ARALLRRTKI	LVLDEATAAV	DLETDDLQIS	TRTQFEDCT	VLTIAHRLMT	IMDYTRVIVL	1500
	DKGEIQEYGA	PSDLLQQRGL	FYSMAKDAGL	V			

## SEQ ID NO:23 PAA2 DNA SEQUENCE

5 Nucleic Acid Accession #: NM\_013309  
Coding sequence: 1-1290 (underlined sequences correspond to start and stop codons)

1	11	21	31	41	51	
ATGCGCGGCT	CTGGCGCGTG	GAAGCGGCTC	AAATCTATGC	TAAGGAAGGA	TGATGCGCGG	60
CTGTTTTTAA	ATGACACACG	CGCCTTTGAC	TTCTCGGATG	AGCGGGGGGA	CGAGGGGCTT	120
TCTCGGTTC	ACAACTTCG	AGTTGTGGTG	GCCGATGACG	GTTCGGAAGC	CCCGGAAGG	180
CCTGTTAACG	GGCGCACCCC	GACCCCTCAG	GCCGACGATG	ATTCTTTACT	GGACCAAGAC	240
TTACCTTTGA	CCAACAGTCA	GCTGAGTTTG	AAGGTGGACT	CCTGTGACAA	CTGCAGCAAA	300
CAGAGAGAGA	TACTGAAGCA	GAGAAAGGTG	AAAGCCAGGT	TGACCATTCG	TGCCGTTCTG	360
TACTTGTCTT	TCATGATTTG	AGAACTTGTA	GGTGGATACA	TTGCAATAG	CCTAGCAATC	420
ATGACAGATG	CATTCATAT	GTTAACTGAC	CTAAGCGCCA	TCATCTCAC	CCTGCTTGCT	480
TTGTGGCTAT	CATCAAAATC	ACCAACCAAA	AGATTCACTT	TTGGATTTC	TCCGTTAGAG	540
GTTTGTGATG	CTATGATTAG	TGTGCTGTTG	GTGTATATAC	TTATGGGATT	CCTCTTATAT	600
GAGCTGTGCG	AAAGAATCAT	CCATATGAAC	TATGAAATAA	ATGGAGATAT	AATGCTCATC	660
ACCGCAGCTG	TTGGAGTTGC	AGTTAATGTA	ATAATGGGGT	TTCTGTTGAA	CCAGTCTGGT	720
CACCGTCACT	CCCATTCCCA	CTCCCTGCCT	TCAAAATCCC	CTACCAGAGG	TTCTGGGTGT	780
GAACGTAAAC	ATGGGCAGGA	TAGCCTGGCA	GTGAGAGCTG	CATTGTGACA	TGCTTTGGGA	840
CAITTTGCTAT	AGAGTGTGCG	TGTGCTAATA	GCTGCATACA	TCATACGATT	CAAGCCAGAA	900
TACAAGATTG	CTGATCCCAT	CTGTACATAC	GTATTTTCAT	TACTTGTGGC	TTTACACA	960
TTTCGAATCA	TATGGGATAC	AGTAGTTATA	ATACTAGAAG	GTGTGCCAAG	CCATTGTAAT	1020
GTAGACTATA	TCAAAGAGC	CTTGATGAAA	ATAGAGATG	TATATTCAGT	CGAAGATTTA	1080
AATATCTGGT	CTCTCACTTC	AGGAAATCT	ACTGCCATAG	TTACATACAC	GCTAATTCCT	1140
GGAACTTCTAT	CTAATGGGA	GGAAATACAG	TCCAAAGCAA	ACCATTATTAT	ATTGAACACA	1200
TTTGCGCATGT	ATAGATGTAC	TATTCAGCTT	CAGAGTTACA	GGCAGAAGT	GGACAGAACT	1260
TGTGCAAAAT	GTCAGAGTTC	TAGTCCCTGA				

## SEQ ID NO:24 PAA2 Protein sequence

35 Protein Accession #: NP\_037441

1	11	21	31	41	51	
MAGSGAWKRL	KSMRLKDDAP	LFINDTSAPD	FSDEAGDEGL	SRFNKLRVVV	ADDGSEAPER	60
PVNGAHTPLQ	ADDSLLDQD	LPLINSQSL	KVDSQDNCCK	QREILKQKRV	KARLTAAVL	120
YLLFMIGELV	GGYIANSLAT	MTDALHMLTD	LSAILITLLA	LHLSKSPKRV	RPTFGPHRLS	180
VLSAMISVLL	VITLMGFLLY	EAVQRTIHNN	YEINGDMLLI	TAAVGVAVNV	IMGFLINQSG	240
HRSHSHSLP	SNSTPRSGGC	ERNHQGDSLA	VRAAFVHALG	DLVQSVGVLI	AAVYIRPKPE	300
YKLADEICTY	VPSLLVAFPT	FRIIMDTVVI	ILEGVPSHLN	VDYIKKALMK	IEDVYSVEDL	360
NIWSLTSGKS	TAIVHIQLIP	GSSSKWEEVQ	SKANHELLINT	FGMYRCTIQL	QSTRQEVDR	420
CANQSSSP						

## SEQ ID NO:25 PAA3 DNA SEQUENCE

50 Nucleic Acid Accession #: AB037765  
Coding sequence: 375-2798 (underlined sequences correspond to start and stop codons)

1	11	21	31	41	51	
GCCGAGTCGG	TGGCGGCTGC	AGGCTGGGAG	GGAGAAGTGC	TACGCTTTTG	CAGGTTGGCG	60
AAGTGGTTC	AGGCTACCCG	GCTAGTCTGG	CACGGCCCGG	TCTTCTGCC	CCTCTCCCGT	120
CGCGTGGCGG	CGGAACTGCT	TGGCCGCGCG	GCCTCGGSA	CGGCCAGGT	CCCGGCCCGC	180
AGGTCCCGGG	CAGATAACAT	AGATCATCAG	TAGAAAACCT	CTTGAAGTTG	TTCAAGAAAA	240
ATTTGAAAGT	AGCAAAATAG	AAAATAAAGA	ATTAACAGCA	GATACAGAGG	ACAGCATGGA	300
AGTGTGTGCT	TAGGAAACAG	AACACAGCAG	TGAAAAAACA	GACAAAATCC	GCTCAGATAC	360
AACTGCAGCT	GATAATGTTT	TCCGGCTTCA	ATGCTTTTAC	AGTTGGGATC	TCTTTTGTCA	420
TAATGTGCAT	TTTTTACATG	CCAACAGTAA	ACTCTTTTAC	AGAAGTGAAT	CCTCAGAAAT	480
ATTTTAGTAC	ATTCGAACCA	GGTCTTGAAG	AACTGAATGA	GGCTGTTAGA	CCTCTGCAGG	540
ACTATGGAAAT	TTAGTTGGCC	AAGGTTAATT	GTGTCAAAGA	AGAAATATCA	AGATACTGTG	600
GAAAAGAAAA	GGATTGTGATG	AAAGCATATT	TATTCAGGGG	CAACATATTG	CTCAGAGAAAT	660
TCCTACTAGTA	CACCTGTGTT	GATGTGAATG	CCATTGTGCG	CCATGTTCTC	TTTGCTCTTC	720
TTTTTAGTGA	AGTGAATAT	ATTACCAACC	TGGAAGACCT	TCAGAACATA	GAAAATGCTC	780
TGAAAGGAAA	AGCAAAATAT	ATATTCTCAT	ATGTAAGAGC	CAITGGGAAT	CCAGAGCACA	840
GAGCAGTCAT	GGAGCCCGGT	TTTGTGTATG	GGACTACATA	CCAATTTGTC	TTAACCACAG	900
AAATTGCCCT	TTTGGAAAGT	ATTGGCTCTG	AGGATGTGGA	ATATGCACAT	CTCTACTTTT	960
TTCAATTGAA	ACTAGTCTTG	GACTTGACCC	AGCAATGTAG	AAGAACACTA	ATGGAACAGC	1020
CATTGACTAC	ACTGAACATT	CACCTGTTTA	TTAAGACAAT	GAAAGCACCT	CTGTTGACTG	1080
AAGTTGCTGA	AGATCCCTAA	CAAGTTTCAA	CTGTCCATCT	CCAACTGGGG	TTACCACTGG	1140
TTTTTATATG	TAGCCAACAG	GCTACTTATG	AAGCTGATAG	AAGAAGTCCA	GAATGGGTTG	1200
CTTGGCGTCT	TCTGGGAAAA	GCAGGAGTTC	TACTCTTGTT	AAGGGACTCT	TTGGAAGTGA	1260
ACATTCTCTCA	AGATGCTAAT	GTGGTCTTCA	AAAGAGCAGA	AGAGGGAGTT	CCAGTGGAAAT	1320
TTTTTGTATT	ACATGATGTT	GATTTAATAA	TATCTCATGT	GGAAAAATAT	ATGCACATTG	1380
AGGAAATACA	AGAAAGATGA	GACAATGACA	TGGAAGGTCC	AGATATAGAT	GTTCAGGATG	1440
ATGAAGTGGC	AGAACTGTTT	TTCAGAGATA	GGAAAGAGAA	ATTACTCTTG	GAACCTTACAG	1500

5	TGGAACAAAC	AGAAGAAACA	TTTAATGCCA	CAGTGATGGC	TTCTGACAGC	ATAGTACTCT	1560
	TCTATGCTGG	TTGGCAAGCA	GTATCCATGG	CATTTTTCGA	ATCCTATATT	GATGTGGCAG	1620
	TTAAACTGAA	AGGCACATCT	ACTATGCTTC	TTACTAGAAT	AAACTGTGCA	GATTTGGCTG	1680
	ATGTATGTAC	TAAGCAAAAT	GTTACTGAAT	TTCTATCAT	AAAGATGTAC	AAGAAAGCG	1740
	AGAACCAGT	ATCTTATGCT	GGATGTTAG	GAACCAAGA	TCTCTAAAA	TTTATCCAGC	1800
	TCAACGAGAT	TTTCATATCCA	GTGAATATAA	CATCGATCCA	AGAAGCAGAA	GAATATTTAA	1860
	GTGGGGAATT	ATATAAGAC	CTCATCTTGT	ATCTAGTGT	GTCAATATTG	GGACTATTTA	1920
	GTCCAACTCT	GAAACACAGC	AAAGAAGATT	TTAGTGAAGC	AGGAACTAC	CTAAAGGAT	1980
10	ATGTTATCAC	TGGAATTTAT	TCTGAAGAAG	ATGTTTGTCT	ACTGTCAACC	AAATATGCTG	2040
	CAAGCTCTTC	AGCCTGCTG	CTTGCCAGAC	ACACAGAAGG	CAAAATAGAG	AGCATCCAC	2100
	TAGCTAGCAC	ACATGCACAA	GACATAGTTC	AAATAATAAC	AGATGCACCTA	CTGGAATATG	2160
	TTCCCGAAAT	CACGTGTGAA	AATCTTCCCA	GTATTTTCAG	ACTTCAGAAA	CCATTTATTGA	2220
	TTTTGTTTCA	TGATGGCAGT	GTAAATCCTC	AATATAAAAA	AGCAATATTG	ACACTGGTAA	2280
	AGCAGAAATA	CTTGGATTCA	TTTACTCCAT	GCTGGTTAAA	TCTAAAGAAT	ACTCCAGTGG	2340
15	GGAGAGGAAT	TTTGGGGGCA	TATTTTGATC	CTCTGCTCC	CCTTCTCTCT	CTTGTTTTGG	2400
	TGAATCTGCA	TTCAAGTGGC	CAAGTATTTG	CATTTCTCTC	AGACCAAGCT	ATATTTGAAG	2460
	AAAACCTTGT	ATTGTGGCTG	AAGAAATTAG	AAGCAGGACT	AGAAAATCAT	ATCACAATTT	2520
	TACCTGCTCA	AGAATGGAAA	CCTCTCTCTC	CAGCTTATGA	TTTTCTAAGT	ATGATAGATG	2580
20	CCGCAACATC	TCAACGTGGC	ACTAGGAAG	TTCCCAAGTG	TATGAAAGAA	ACAGATGTGC	2640
	AGGAGATGA	TAAGGAACAA	CATGAAGATA	AATCGGCAGT	CAGAAAAGAA	CCGATTGAAA	2700
	CTCTGAGAT	AAAGCATTTG	AATGAAGATA	ATTGGTTTAA	AGAAGCAGAA	AAATCATTTA	2760
	GACGTGATAA	AGAGTTAGGA	TGCTCAAAAG	TGAATTAATT	TTATAGGCTG	GTGTTTCCA	2820
	AAATTTTTTT	GGCATGATAG	ACTTAATTTA	TTTCTTAAA	GAATAATATT	AAATCATTTT	2880
25	AAGTTTGCAG	ACTAGTGCCA	TCCATAGAAA	TTATAATATA	AGTCACATAT	TTTATTTAAA	2940
	ATTTTCTAGT	AATCATATTA	AACAAAGTAA	AAGTGAGCAG	GGCAAAATAA	TTTTGATATT	3000
	ACTTTTCACC	CAGTAGTATA	CCCAAAATAG	CGAAATATAG	AAATTTATTA	TGAGATATTT	3060
	TACATCTCTT	TTTGTACCAA	GTCTTCTAAA	TGCAGTACAT	ATTTTATACT	TACTGCATTT	3120
30	CTTACTTCCG	AGTAGCCATA	TTTCAAGTGT	TGATGCTCAC	ATGTGGCCTG	TGACTACTGT	3180
	ATTGGACAGT	TCAGTACTAG	ACAAAACATA	GCATAATTA	CTTAGTTCTA	GCCATGATTT	3240
	CTATTGTGGT	TAAATTTAAA	CTCTAATCAC	AGTTAATCTC	ACAGTGCATT	CATGACAGCT	3300
	ACAGTTATAT	TTGTTTATT	GGAGTCATGA	TATTAATAAT	AGCGTTTGTG	AACCTCAGGG	3360
	GATATTAGC	AATGTGCGG	AGACATTTT	GATGTATGA	CTAGGGCAGT	TATTTGACAT	3420
35	TAGTGAGTAG	AGGCCATGGA	TCTTCTTAAA	TAACTGCTAT	TGGACAGCGC	CCCAACACAA	3480
	AGAATTATCT	TGCCCCGAAT	GGTAGTCTGT	CCAAGGCTGA	GTAACTTGT	GTAAAAAGTA	3540
	ACCTGTGGCA	GACTAGGTTT	CCAGAAATTC	CTGGTTCTGC	TCACGTATCA	TGTTTGAAAA	3600
	AATTTTGGCT	ATTAAGATATA	TGTATTAGAT	GGTCTTATCC	TGATTATTAC	CTGGATACAA	3660
	CTTGATCTCT	TCTAATATT	TCAGAAAGTG	ATGGGATAAC	OCTAGAAGAG	GACTCAGAA	3720
	GATATTATTA	TTTAAAGTGA	GTCTTAAAC	CTCCTCTTAT	TCTTACAAGT	TATATGGCTA	3780
40	AATTTAGAT	TGACACAGGA	TTACAGATTC	TGCCATCTCC	TCATGGAAAG	AGAGGCTCCC	3840
	TCATCTGAAG	CGTCTCTGAA	ATCTACCTT	GCAAGCTTCA	GACAAATCAG	TTGATCTCCC	3900
	TGAGCCACAC	GGCCTCATTC	TGTGAGGAG	GGAAGATTA	GCCAAAGAGT	TAATTTTCAT	3960
	TCCAAATCAC	TTAGCTGTTA	GACTGATCTG	TTGTAGCAG	TTGTTTGTCT	CATTTTGTCT	4020
	CTGTGCAATT	TTTGAGACAT	TGTTTGAGAA	TATTTCTATT	GGTGCTCTAC	TGTATTTTTC	4080
45	TTTTTAATAT	CTACTTGATA	TCTTGTCTTT	TAAATTTTCT	TCACATATGG	TTTGCTGAT	4140
	ACAACTGATT	TTTATAACTG	AAATTTAAGG	AATCTAACAG	CTAAACTCTA	GTAAAGTCAT	4200
	MTATTTCTCT	ATAACATAGA	CCGTTGCTA	CTCTCAGCAC	CCTCTCTCTA	ATTTTTTTTC	4260
	CTGTAGCATG	TGATGCTGTA	TTAAACTCAT	TTTCATTTCG	TTTTATTTC	AATATGGGAA	4320
	CAATGAGAGT	GAATCTTAAA	TATAGGTTGT	AGTAATATAA	CATCATTAGC	CTAATTTATTA	4380
50	GAAATGCTA	ATTAAGTACC	AGCACATAGA	AACATGAAAT	TGCTTAGTCA	TTGTACCTTT	4440
	GTCAGCAATT	TTGACAGTCA	TTAATGTTTG	TCATAATTTT	AAATAAAGTG	TCTGGGTTTC	4500
	AGAATACCTT	CAAAAAAAA	AAAAA				

## SEQ ID NO:26 PAA3 Protein sequence:

Protein Accession #: BAA82582

55	1	11	21	31	41	51	
	MPSPGNVFRV	GISFVIMCIP	YMPTVNSLPE	LSPQKYPSTL	QPGLEELNEA	VRPLQDYGIS	60
60	VAKVNCVKEE	ISRYCGKEKD	LMKAYLFKGN	ILLREFPTDT	LFDVNAIVAH	VLFALLFSEV	120
	KYITNLEDLQ	NIENALKGKA	NIIIPSYVRAI	GIPEHRAVME	AGFVYGTYYQ	FVLTTETIALL	180
	ESIGSEDEVY	ABLYFPCHKL	VLDLTQCCRR	TLMEQPLTTL	NIHLFIKTMK	APLLTEVAED	240
	PQOVSTVHLQ	LGLFLVFIVS	QOATYEADRR	TAENVAVRLL	GKAGVLLLLR	DSLEVNIPQD	300
	ANVVPKRAEE	GVVPEFLVLE	DVDLIISHVE	NMHIIEIIEQ	DEDNMEGFPD	IDVQDEVAE	360
65	TVFRDRRRLK	FLELTVELTE	ETPNATVMAS	DSIVLFYAGW	QAVSMAPLQS	YIDVAVKLKG	420
	TSTMLLTRIN	CADWSVCTK	QNVTEPPIIK	MYKKGENPVS	YAGMLGTKDL	LKFIQLNRIS	480
	YFVNITSIQE	AEYLSGELY	KDLILYSVS	VLGLFSPTMK	TAKEDFSEAG	NYLKGVYITG	540
	IYSEEDVLLL	STKYAASLPA	LLARHTEBKG	IBSIPLASTH	AQDIVQIITD	ALLEMPFEIT	600
	VENLPSYFRL	QKPLLLFSD	GTVPQYKKA	ILTLVKQKYL	DSFTPCWMLN	KNTFVGRGIL	660
70	RAYFDPLPLP	PLVLVNLHS	GGQVFAFSPD	QAIIEENLVL	WLKLEAGLE	NHITLPAQE	720
	WKPLPAYDF	LSHIDAATSQ	RGTRVPEKCH	KETDVQENDK	EQBEDKSAVR	KEPIETLRIK	780
	HWNRNSNWFKE	AEKSPRRDKE	LGCSKVN				

## SEQ ID NO:27 PAA5 DNA SEQUENCE

Nucleic Acid Accession #: NM\_012449

Coding sequence: 66-1085 (underlined sequences correspond to start and stop codons)

75	1	11	21	31	41	51	
	CCGAGACTCA	CGGTCAAGCT	AAGGCGAAGA	GTGGGTGGCT	GAAGCCATAC	TATTTTATAG	60
80	AATTAATGGA	AAGCAGAAAA	GACATCACA	ACCAAGAAGA	ACTTTGGAAA	ATGAAGCCTA	120

	GGAGAAATTT	AGAAGAAGAC	GATTATTTGC	ATAAGGACAC	GGGAGAGACC	AGCATGCTAA	180
	AAAGACCTGT	GCTTTTGCAT	TTGCCACAAA	CAGCCCATGC	TGATGAATTT	GACTGCCCTT	240
	CAGAACTTCA	GCACACACAG	GAACCTCTTC	CACAGTGGCA	CTTGCCAATT	AAAATAGCTG	300
5	CTATTATAGC	ATCTCTGACT	TTTCTTTACA	CTCTTCGAG	GGAACTAATT	CACCCCTTAG	360
	CAACTTCCCA	TCAACAATAT	TTTTATAAAA	TTCCAATCCT	GGTCATCAAC	AAAGCTCTGC	420
	CAATGGTTTC	CATCACCTCT	TTGGCATTGG	TTTACCTGCC	AGGTGTGATA	GCAGCAATTG	480
	TCCAACTTCA	TAATGGAAAC	AAGTATAAGA	AGTTTCCACA	TTGGTTGGAT	AAGTGGATGT	540
	TAACAAGAAA	GCAGTTTGGG	CTTCTCAGTT	TCCTTTTGGC	TGTACTGCAT	GCAATTTATA	600
10	GTCTGTCTTA	CCCAATGAGG	CGATCCTACA	GATACAAGTT	GCTAACTGG	GCATATCAAC	660
	AGGTCCAACA	AAATAAGAA	GATGCCCTGA	TTGAGCATGA	TGTTTGGAGA	ATGGAGATT	720
	ATGTGTCTCT	GGGAATTGTG	GGATTGGCAA	TACTGGCTCT	GTGGCTGTG	ACATCTATT	780
	CATCTGTGAG	TGACTCTTTG	ACATGGAGAG	AATTTCACATA	TATTCAGAGC	AAGCTAGGAA	840
	TTGTTTCCCT	TCTACTGGGC	ACAATACACG	CATTGATTTT	TGCTTGGAA	AAGTGGATAG	900
15	ATATAAACA	ATTTGTATGG	TATACACCTC	CAACTTTTAT	GATAGCTGTT	TTCTCTCCAA	960
	TTGTGTCTCT	GATATTTAAA	AGCATACTAT	TCCTGCCATG	CTTGAGGAAG	AAGTACTTGA	1020
	AGATTAGACA	TGGTTGGGAA	GACGTACACA	AAATTAACAA	AACTGAGATA	TGTTCCCACT	1080
	TGTAGAAATTA	CTGTTTACAC	ACATTTTGTG	TCAATATTGA	TATATTTTAT	CACCAACATT	1140
	TCAGGTTTGT	ATTGCTTAAT	AAAATGATTA	TTCAAGGAAA	AAAAAAAAAA	AAAAA	
20	SEQ ID NO:28 PAA5 Protein sequence						
	Protein Accession #: NP_036581						
	1	11	21	31	41	51	
25	MESRKDITNQ	SELWKMKPRR	NLEEDDYLRK	DTGETSMLEK	FVLLHLHQTA	HADEFDCPSE	60
	LQHTQELFPQ	WHLPIKIAAI	IASLTFLYTL	LREVIHPLAT	SHQQYFYKIP	ILVINKVLPH	120
	VSITLLALVY	LPGVIAAIVQ	LHNGTKYKFF	PHWLKRWMLT	RKQFGLLSFF	FAVLHAIYSL	180
	SYPMRRSYRY	KLINMAYQQV	QQNKEDAWIE	HDVWRMEIVV	SLGIVGLLAIL	ALLAVTSIPS	240
30	VSDSLVWRPF	HYIQSKLGLV	SLLGLTIHAL	IFAWNKHIDI	KQFVWTFPPT	FMLAVFLFIV	300
	VLIFPSILFL	PCLRRKKILKI	RHWEDVTKI	NKTEICSQL			
	SEQ ID NO:29 PAA7 DNA SEQUENCE						
	Nucleic Acid Accession #: NM_030774						
	Coding sequence: 1-863 (underlined sequences correspond to start and stop codons)						
35	1	11	21	31	41	51	
	ATGAGTTCCT	GCAACTTCAC	ACATGCCACC	TTTGTGCTTA	TTGGTATCCC	AGGATTAGAG	60
	AAAGCCCATG	TCCTGGGTGG	CTTCCCCCTC	CTTTCCATGT	ATGTAGTGGC	AATGTTTGGG	120
40	AACGTGATCG	TGGTCTTCAT	CGTAAGGACG	GAACGCAGCC	TGCACGCTCC	GATGTACCTC	180
	TTTCTCTGCA	TGCTTGCAGC	CATTGACCTG	GCCTTATCCA	CATCCACCAT	GCCTAAGATC	240
	CTTGGCCTTT	TCCTGTTTGA	TTCCCGAGAG	ATTAGCTTTG	AGGCGTGTCT	TACCCAGATG	300
	TTCTTTATTC	ATGCCCTCTC	AGCCATGTAA	TCCACCATCC	TGCTGGCCAT	GGCCTTTGAC	360
	CGTTATGTGG	CCACTCTGCC	CCCACCTGCG	CATGCTGCAG	TGCTCAACAA	TACAGTAACA	420
45	GCCAGATGTA	TGAAGTTGGC	TGTGGTCCGC	GGATCCCTCT	TTTTTTTCCC	ACTGCCCTCG	480
	CTGATCAAGC	GGCTGGCCTT	CTGCCACTCC	AATGTCTCTT	CGCACTCCTA	TTGTGTCCAC	540
	CAGGATGTAA	TGAAGTTGGC	CTATGCAGAC	ACTTTGCCCA	ATGTGGTATA	TGGTCTTACT	600
	GCCATTTCTG	TGGTCATGGG	CGTGACGCTA	ATGTTCATCT	CCTTGTCTTA	TTTTCTGTATA	660
50	ATACGAACGG	TTCTGCAACT	GCCTTCCAAG	CCAGAGCGGG	CCAAGGCTTT	TGGAACCTGT	720
	GTGTACACAA	TTGGTGTGGT	ACTCGCCTTC	TATGTGCCAC	TTATTGGCCT	CTCAGTGGTA	780
	CACCGCTTTG	GAACACGCTT	TCATCCCAAT	GTGCGTGTGG	TCATGGGTGA	CATCTACCTG	840
	CTGCTGCCCT	CTGTCAATCA	TCCCATCAAT	TATGGTGCCA	AAACCAAAAC	GATCAGAAAC	900
	CGGGTGGCTG	CTATGTTCAA	GATCAGCTGT	GACAAGGACT	TGCAGGCTGT	GGGAGGCAAG	960
	TGACCCCTAA	CACATACACT	CTCCTTATCT	TTATTGGCTT	GATAAACATA	ATTATTCTTA	1020
55	ACACTAGCTT	ATTTCAGATT	GCCATAAGC	ACATCAGTAC	TTTTCTCTGG	CTGGAATAGT	1080
	AAACTAAAGT	ATGGTACATC	TACCTAAAGG	ACTATTATGT	GAATAATAC	ATACTAATGA	1140
	AGTATTACAT	GATTTAAGGA	CTACAATAAA	ACCAACATG	CTTATAACAT	TAAGAAAAAC	1200
	AATAAGATA	CATGATTGAA	ACCAAGTTGA	AAAATAGCAT	ATGCCTTGGA	GGAAATGTGC	1260
	TCAAATTACT	AATGATTTAG	TGTTGTCCCT	ACTTTCTCTC	TCCTTTTCTT	TTCTTTTTTT	1320
60	TTTATTATGG	TTAGCTGTCA	CATACAACTT	TTTTTTTTTT	TGAGATGGGG	TCCTGCTCTG	1380
	TCACCAAGCT	GGAGTGCAGT	GGCGCATCTT	CGCTCACTG	CAACCTCCAC	ATCCCATGTT	1440
	GAAGTAATTC	TTCTGCCCTA	GCCTCCCGAG	TAGCTGGGAC	TAGAGGAACG	TGCCACCATG	1500
	ACTGGCTAAT	TTCTGTGATT	TTTTAGTAGA	GACAGAGTTT	CACCATGTTG	GCCAGGATGG	1560
	TCTCGATCTC	CTGACCTTGT	GATCCACCCG	CCTCAGCCTC	CCAAAGTGTT	GGGATTACAG	1620
65	GTGTGAACCA	CTGTGCCCGG	CCTGTGTACA	ACTTTTTTAA	TAGGGAATAT	GATAGCTTCG	1680
	CATGGTGGTG	TGCACCTATA	GCCTCCACTG	CCTGGAAAGC	TGAGGTGGGA	GAATCGCTTG	1740
	AGTCCAGGAG	TTTGAGGTGA	CAGTGTATCA	CGATGTATCC	ACTACACTCC	AGCCTGGGCA	1800
	ACAGAGCAAG	ACCCCTGTCT	AAAGCATAAA	ATGGAATAAC	ATATCAAAAT	AAACAGGGAA	1860
	AATGAAGCTG	ACAATTATAT	GAAGCCAGGG	CTTGTCACAG	TCTCTACTGT	TATTATGTAT	1920
70	TACCTGGGAA	TTTATATAAG	CCCTTAATAA	TARTGCCAAT	GAACATCTCA	TGTGTCTCTA	1980
	CAATGTACTG	GCACATATTAT	AAGTGTCTCA	CAGGTTTAT	GTGTCTCTCG	TAACITTTAT	2040
	GAGTAGGTAC	CATTGTGTCT	TCCTTATTAT	AAGTGAGAGA	AATGAAGTTT	ATATTATCAA	2100
	GGGGACTAAA	GTCACACGGC	TTGTGGGCAC	TGTGCCAAGA	TTTAAATTA	ATTGTATGG	2160
	TTGAATACAG	TTACTTAATG	ACCATGTTAT	ATTGCTTCTT	GTGTAACATC	TGCCATTTAT	2220
75	TTCTCTAGCT	GTACAAATCC	TCTGTTTTCT	CTCTGTATCA	CACATACATC	AATGGCTTTG	2280
	TACTTGTGAT	GAGAGATAAC	CTTGGCCCTAG	TTGTGGGCAA	CACATGCAGA	ATAATCCTGT	2340
	TTTACAGCTG	CCTTTCTGTA	TCTTATTGCT	TGCTTTTTTC	CAGATTTCAG	GAGAAATGTT	2400
	TTGCTTAATT	GTCTCTTACA	TCCTCTTGAT	CATGCTCTCA	TTTTTAAATG	TGCTCTGTAC	2460
80	CTGTCAAAAA	TTTTGAATGT	ACACCACTG	CTATTGTCTG	AACCTGAGTA	TAAGATAAAA	2520
	TAAATTTTAA	TTTTAAATTT	T				

**SEQ ID NO:30 PAA7 PROTEIN SEQUENCE**

Protein Accession #: NP\_110401

5 1 11 21 31 41 51  
 MSSCNFTHAT FVLIGIPGLE KAHFWVGFPL LSMYVVMFNG NCIVVPIVRT ERSIHAPMYL 60  
 FLCMLAAILD ALSTSTMFKI LALFWFDSRE ISPEACLTCM FFIHALSAIE STILLAMAFD 120  
 RYVAICHPLR HAALNNFVT AQIGIVAVVR GSLPFFPLPL LIKRLAFCHS NVLSHSYCVH 180  
 10 QDVMLKAYAD TLPNVVYGLT ALLVMGVVDV MFISLSYPLI IRTVLQLPSK SERAKAFGTC 240  
 VSHIGVVLAF YVPLIGLSVV HRPGNLSLHP1 VRVVMGDIYL LLPVINPII YGAKTKQIRT 300  
 RVLAMPKISC DKDLQAVGGK

**SEQ ID NO:31 PAV6 DNA SEQUENCE**

Nucleic Acid Accession #: XM\_050837

Coding sequence: 1-1020 (underlined sequences correspond to start and stop codons)

20 1 11 21 31 41 51  
 ATGAAGTGGG AGCTGCTGCT GTGGCTGCTG GTGCTGTGCG CGCTGCTCCT GCTCTGGGTG 60  
 CAGCTGCTGCT GCTTCCTGAG GGTGACGCG GACCTGACGC TACTATGGGC CGAGTGGCAG 120  
 GGACGACGCC CAGAATGGGA GCTGACTGAT ATGGTGGTGT GGTGACTGG AGCCTCGAGT 180  
 GGAATGGTGT AGGAGCTGGC TTACCACTTG TCTAAACTAG GAGTTTCTCT TGTGCTGTCA 240  
 25 GCCAAGAGAG TGCATGAGCT GGAAGGGTGT AAAAGAAGAT GCCTAGAGAA TGGCAATTTA 300  
 AAAGAAAAG ATATACTTGT TTTGCCCTTT GACCTGACCG ACACTGGTTC CCAATGAAGCG 360  
 GCTACCAAG CTGTCTCTCA GAGTTTGGT AGAATGACA TTCTGGTCAA CAATGGTGGG 420  
 ATGTCCACG GTTCTCTGTG CATGGATACC AGCTTGGATG TCTACAGAAA GCTAATAGAG 480  
 CTTAACTACT TAGGGACGGT GTCTTGGACA AATGTGTGTC TGCTTCACAT GATCGAGAGG 540  
 AAGCAAGGAA AGATTGTTAC TGTGAATAGC ATCTCTGGTA TCATATCTGT ACCTCTTTCC 600  
 30 ATTGGTACT GTGCTAGCAA GCATGCTCTC CGGGTGTGTT TTAATGGCCT TCGAACAGAA 660  
 CTTGCCACAT ACCCAGGTAT AATAGTTTCT AACATTGCC CAGGACCTGT GCAATCAAT 720  
 ATTGTGGAGA ATTCCCTAGC TGGAGAAGTC ACAAGACTA TAGGCAATAA TGGAGACCA 780  
 TCCCAACAAG TGACAACCAG TCGTTGTGTG CGGCTGATGT TAATCAGCAT GGCCAATGAT 840  
 TTGAAGAGAG TTGGATCTC AGAACAACCT TTCTGTGTAG TAACATATTT GTGGCAATAC 900  
 35 ATGCCAAGCT GGGCTGGTG GATAACCAAC AAGATGGGGA AGAAAAGGAT TGAGAACTTT 960  
 AAGAGTGGTG TGGATGACGA CTCTTCTTAT TTAAAAATCT TTAAGACAAA ACATGACTGA

**SEQ ID NO:32 PAV6 Protein sequence**

Protein Accession #: XP\_050837

40 1 11 21 31 41 51  
 MNWELLMLL VLCALLLLLV QLLRFLRADG DLTLLWAEMQ GRRPEWELTD MVVWVTGASS 60  
 GIGELAYQL SKLGSLVLS ARRVELERV KRCLENGNL KEKDLIVLPL DLTDTGSHEA 120  
 45 ATKAVLQEFQ RDILVNRNG MSQSLCMDT SLDVYRKLE LNYLGTSLT KCVLPHMTER 180  
 RQKIVTVNS ILGIISVPLS IGYCASKHAL RGFFNGLRTE LATYFGLIVS NICFPGVQSN 240  
 IVENSAGEV TKTIGNNGDQ SHKHTTSRCV RLHLISMAND LKEVWISQEP PLLVYTLWQY 300  
 MPTWAWWITN KMGKKRIENF KSGVDADSSY FKIFKTKHD

**SEQ ID NO:33 PBA6 DNA SEQUENCE**

Nucleic Acid Accession #: NM\_006853

Coding sequence: 28-874 (underlined sequences correspond to start and stop codons)

55 1 11 21 31 41 51  
 AGGAATCTGC GCTCGGGTTC CGCAGATGCA GAGTTGAGG TGGCTGCGGG ACTGGAAGTC 60  
 ATCGGGCAGA GGTCTCACAG CAGCCAAGGA ACCTGGGGCC CGCTCCTCCC CCTCCAGGC 120  
 CATGAGGATT CTGCAGTTAA TCCTGCTTGC TCTGGCAACA GGGCTTGTAG GGGGAGAGAC 180  
 CAGGATCATC AAGGGGTTCG AGTGCAAGCC TCACTCCAGC CCTGGCCAGG CAGCCCTGTT 240  
 60 CGAGAAGACG CGGCTACTCT GTGGGGCGAC GCTCATCGCC CCCAGATGCG TCTTGACAGC 300  
 AGCCCCACTGC CTCAAGCCCC GCTACATAGT TCACCTGGGG CAGCACAAAC TCCAGAAGGA 360  
 GAGGGGCTGT GAGCAGACCC GGACAGCCAC TGAGTCCTTC CCCACCCCG GCTTCAACAA 420  
 CAGCCTCCCC AACAAAGACC ACCGCAATGA CATCATGCTG GTGAAGATGG CATCGCCAGT 480  
 CTCCATCACC TGGGCTGTGC GACCCCTCAC CCTCTCCTCA CGCTGTGTCA CTGCTGGCAC 540  
 65 CAGCTGCTCT ATTTCCGGCT GGGGCAGCAC GTCCAGCCCC CAGTTAGGCC TGCTCACAC 600  
 CTTGCGATGC GCCAATATCA CCATCATTTGA GCACCAGAAG TGTGAGAAGC CCTACCCCGG 660  
 CAACATCACA GACACCATGG TGTGTGCCAG COTGCAGGAA GGGGGCAAGG ACTCCTGGCA 720  
 GGGTGAAGTC GGGGGCCCTC TGGTCTGTAA CAGTCTCTT CAAGGCATTA TCTCTGGGG 780  
 CCAGGATCCG TGTGCGATCA CCCGAAAGCC TGGTGTCTAC ACGAAAGTCT GCAAAATATG 840  
 70 GGACTGATC CAGGAGACGA TGAAGAACAA TTAGACTGGA CCCACCCACC ACAGCCCATC 900  
 ACCCTCATTT TCACTTGGT GTTTGGTTCC TGTTCATCT GTTAATAAGA AACCCTAAGC 960  
 CAAGACCCCT TACGAACATT CTTTGGGCTC CTGGAATAC AGGAGATGCT GTCACTTAAT 1020  
 AATCAACCTG GGGTTCGAAA TCACTGAGAC CTGGATTCAA ATTCTGGCTT GAAATATTGT 1080  
 75 GACTCTGGGA ATGACAACAC CTGGTTTGT TCTGTGTGA TCCCCAGCCC CAAAGACAGC 1140  
 TCCTGCGCAT ATATCAAGGT TTCAATAAAT ATTTGCTAAA TGAGTG

**SEQ ID NO:34 PBA6 PROTEIN SEQUENCE**

Protein Accession #: NP\_006844



1 11 21 31 41 51  
 5 MRILQLILLA LATGLVGGET RIIKGFCECKP HSQFWQAAIF EKTRLLCGAT LIAPRWLLTA 60  
 AHCLKPRYIV HLGQHNLOKE EGCEQTRTAT ESFPHPGFNN SLFNKDHHRND IMLVRMASFV 120  
 SITWAVRPLT LSSRCVTAQT SCLISGWGST SSPQLRLPHT LRCANITIIIE HQKCEWAYFG 180  
 NITDTMVCAS VQEGGKDSQC GDSGGPLVCN QSLQGLIISWG QDPCAITRKP GVYTKVCKYV 240  
 DWIQETMRNN

10 SEQ ID NO:35 PBC1 DNA SEQUENCE

Nucleic Acid Accession #: NM\_001775

Coding sequence: 70-972 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
 15 CTAAAGCTCT CTGTGCTGCT AGCCTCTGTC CGGCTCATC TTGCCCCAGC CAACCCCGCC 60  
 TGGAGCCCTA TGGCCAACTG CGAGTTCAGC CCGGTGTCCG GGGACAAACC CTGCTGCCGG 120  
 CTCTCTAGGA GAGCCCAACT CTGTCTTGGC GTCAGTATCC TGGTCCCTGAT CCTCGTCGTG 180  
 GTGCTCGCGG TGGTCTGCCC GAGGTGSCGC CAGACGTGGA GCGGTCCGGG CACCACCAAG 240  
 20 CGCTTTCCCG AGACCCGCTC GCGCGGATGC GTCAAGTACA TCCTGAGATG TCCTGAGATG 300  
 AGACATGTAG ATGCCCCAAG TGTATGGGAT GCTTTCAAGG GTGCAATTAT TCCTGAGATG 360  
 CCTTGCACCA TTACTGAAGA AGACTATCAG CCACTAATGA AGTTGGGAAC TCAGACCGTA 420  
 CCTTGCACCA AGATTCTTCT TTGAGGACGA ATAAAGATC TGGCCCATCA GTTCACACAG 480  
 25 GTCCAGCGGG ACATGTTTCA CCTGGAGGAC ACGCTGCTAG GCTACCTTGC TGATGACCTC 540  
 ACATGCTGTG GTGAATTCAA CACTTCCAAA ATAACTATC AATCTTGCCC AGACTGGAGA 600  
 AAGGACTGCA GCAACAACCC TGTTTCACTA TTCTGGAAAA CCGTTTCCCG CAGGTTTGCA 660  
 GAAGCTGCTT GTGATGTGGT CCATGTGATG CTCAATGGAT CCGCAGTAA AATCTTTGAC 720  
 AAAACACGCA CTTTGGGAG TGTGGAAGTC CATATTGTC AACCAGAGAA GGTTCAGACA 780  
 30 CTAGAGGCTT GGGTGATACA TGGTGAAGA GAAGATTCCA GAGACTTATG CCAGGATCCC 840  
 ACCATAAAGG AGCTGGAAAT GATTATAAGC AAAAGGAATA TTCAATTTC CTGCAAGAAT 900  
 ATCTACAGAC CTGACAAAGT TCTTCACTGT GTGAAAAATC CTGAGGATTC ATCTTGACAT 960  
 TCTGAGATCT GAGCCAGTCG CTGTGCTGTG TTTAGCTCTT TGACTCTCTG TGGTTTATGT 1020  
 CATCATACAT GACTCAGCAT ACCTGCTGCT GCAGAGCTGA AGATTTTGGA GGGTCTCTCA 1080  
 35 CAATAAGGTC AATGCCAGAG ACGGAAGCCT TTTTCCCAAA AGTCTTAAAA TAACCTATAT 1140  
 CATCAGCATA CCTTTATTGT GATCTATCAA TAGTCAAGAA AAATATTATG ATAAGATTAG 1200  
 AATGAAATTT GTATGTTAAG TTACTTCCTT TAG

SEQ ID NO:36 PBC1 Protein sequence

Protein Accession #: NP\_001766

1 11 21 31 41 51  
 40 MANCEFSFVS GDKPCRLSR RAQLCLGVSI LVLLVVVLA VVPRWRQIW SGPOTTKRPP 60  
 ETULARCVKY TSIHPEKRVH DCQSVWDAFK GAFISKHPCN ITEEDYQPLM KLGTQTVPCN 120  
 45 KILLWSRDKL LAHQFTQVQR DMFTLEDLL GYLADDLTMC GEPNTSKINY QSCPDWRKDC 180  
 SNNPVSFWK TVNSRFAEBA CQVVEVLMNG SRSKIFDKNS TFGSVEVHNL QPEKVQVLEA 240  
 WVTHGREDSD RDLQDPTIK ELESIIKRN IQFSCKNIYR PDKFLQCVKN PEDSSCTSEI

50 SEQ ID NO:37 PBH1 DNA SEQUENCE

Nucleic Acid Accession #: XM\_017718

Coding sequence: 1-3315 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
 55 ATGTCTTTC GGGCAGCCAG GCTCAGCATG AGGAACAGAA GGAATGACAC TCTGGACAGC 60  
 ACCCGGACCC TGTACTCCAG CGGCTCTCGG AGCAGAGACT TGTCTTACAG TGAAGCGGAC 120  
 TTGTTGAATT TTATTTCAAGC AAATTTTAAAG AAACGAGAAT GTGTCTTCTT TACCAAGAT 180  
 TCCAAAGCCA CGGAGAATGT GTGCAAGTGT GGTATGCCCC AGAGCCAGCA CATGGAAGCC 240  
 60 ACCCAGATCA ACCAAAGTGA GAATATGGAAC TACAAGAAAC ACACCAAGGA ATTTCCTACC 300  
 GACCGCTTTC GGGATATTTCA GTTTGAGACA CTGGGGAAGA AAGGGAAGTA TATACGTCTG 360  
 TCTGCGGACA CGGACGGGGA AATCCTTTTAC GAGCTGCTGA CCGAGCACTG GCACCTGAFA 420  
 ACACCCAAAC TGGTCATTTC TGTGACCGGG GCGGCCAAGA ACTTGGCCCT GAAGCCCGGC 480  
 ATGGCAAGA TCTTCAGCCG GCTCATCTAC ATCGGCACT CCAAGGTGTC TTGGATTCTC 540  
 65 ACGGGAGCCA CCTATTATGG CCTGATGAAG TACATCGGGG AGTGGTGAAG AGATAACACC 600  
 ATCAGCAGGA GTTCAGAGGA GAATATTGTG GCCATTGGCA TAGCAGCTTG GGGCATGGTC 660  
 TCCAACCGGG ACACCTCAT CAGGAATTGC GATGCTGAGG GCTATTTTAT AGCCAGTAC 720  
 CTTATGGATG ACTTCACAAG AGATCCACTG TATATCTCTG ACAACAACCA CACACATTG 780  
 CTGCTCGTGG ACAATGGCTG TCAATGACAT CCCACTGTGC AAGCAAGACT CCGGAATCAG 840  
 70 CTAGAGAAGT ATATCTCTGA GCGCACTATT CAAGATTCCA ACTATGGTGG CAAGATCCCC 900  
 AATGTGTGTT TTGCCCAAGG AGGTGGAAAA GAGACTTTGA AAGCCATCAA TACCTCCATC 960  
 AAAAATAAAA TTCTTGTGTG GGTGGTGGAA GGCTCGGGCC AGATCGCTGA TGTGATCGCT 1020  
 AGCCTGGTGG AGGTGGAGGA TGCCCTGACA TCTTCTCGCC TCAAGGAGAA GCTGGTGGCC 1080  
 TTTTACCCG GCACGGTGT CCGGCTGCC T GAGGAGGAGA CTGAGAGTTG GATCAATGG 1140  
 75 CTCAGAAAA TTCTCGAATG TTCTACCTTA TTAACAGTTA TTAATAAGGA AGAAGCTGGG 1200  
 GATGAAATGT TGAGCAATGC CATCTCTTAC GCTCTATACA AAGCTTTCAG CACCACTGAG 1260  
 CAAGACAAGG ATAACTGGAA TGGGCACTG AAGCTTCTGC TGGAGTGGAA CCAGCTGGAC 1320  
 TTAGCAATG ATGAGATTTT CACCAATGAC CCGCATGGG AGTCTGCTGA CCTTCAAGAA 1380  
 GTCATGTCTA CCGCTCTCAT AAAGGACAGA CCAAGTTG TCCGCTCTT TCTGGAGAA 1440  
 80 GGCCTGAACC TACGGAAGTT TCTCAACCAT GATGTCTCTA CTGAACCTCT CTCCAACCC 1500  
 TTCAGCACGC TTGTGTACCG GAATCTGCAG ATCGCAAGA ATTCTATATA TGATGCCCTC 1560

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10  
15  
20  
25  
30

CTCACGTTTG TCTGGAAACT GGTTCGGAAC TTCCGAAGAG GCTTCCGGAA GGAAGACAGA 1620  
AATGGCCGGG ACGAGATGGA CATAGAAGCT CACGACGTGT CTCTATTAC TGGCACCCCC 1680  
CTGCAAGCTC TCTTCATCTG GCCCATTCCT CAGAATAAGA AGGAACCTCT CAAAGTCATT 1740  
TGGGACAGA CCAGGGGCTG CACTCTGGCA GCCCTGGGAG CCAGCAAGCT TCTGAAGACT 1800  
CTGGCCAAAG TGAAGAACGA CATCAATGCT GCTGGGGAGT CCGAGGAGCT GGCTAATGAG 1860  
TACGAGACCC GGCCTGTGTA GCTGTTCACT GAGTGTACCA GCAGCGATGA AGACTTGGCA 1920  
GAACAGCTGC TGGTCTATTG CTGTGAAGCT TGGGGTGGAA GCACTGTCTT GGAGCTGGCG 1980  
GTGGAGGCCA CAGACCGACA TTTCATCGCC CAGCCTGGGG TCCAGAATTT TCTTCTAAG 2040  
CAATGGTATG GAGAGATTTC CCGAGACACC AAGAACTGGA AGATTATCCT GTGTCTGTTT 2100  
ATTATACCTT TGGTGGGCTG TGGCTTTGTA TCATTTAGGA AGAAACCTGT CGACAAGCAC 2160  
AAGAAGCTGC TTGTGTAACA TGTGGCGTTC TTCACCTCCC CCTTCGTGGT CATCTCCTGG 2220  
AATGTGGTCT TCTACATCGC CTTCCTCCTG CTGTTTGCCT ACCTGCTGCT CATGGATTTC 2280  
CATTGCGTGC CACACCCCCC CGAGCTGGTC CTGTACTGCG TGGTCTTTGT CCTCTCTGT 2340  
GATGAAGTGA GACAGTGGTA CGTAAATGGG GTGAATTATT TTACTGACCT GTTGAATGTG 2400  
ATGGACAGCG TGGGGCTTTT TTACTTCATA GCAGGAATTG TATTTTCGGCT CCACCTCTCT 2460  
AATAAAAGCT CTTTGTATTG TGGACGAGTC ATTTCTCTGC TGGACTACAT TATTTTCACT 2520  
CTAAGATTGA TCCACATTTT TACTGTAAAG AGAACTTAG GACCCAAGAT TATAATGCTG 2580  
CAGAGAGTGC TGATCGATGT GTTCTTCTTC CTGTTCTCTT TTCCGGTGTG GATGGTGGCC 2640  
TTTGGCGTGG CCAGGCCAAGG GATCCTTAGG CAGAATGAGC AGCGCTGGAG GTGGATATTG 2700  
CGTTTCGGTCA CTACGAGGCC CTACCTGGCC ATGTTGGGCC AGGTGCCAG TGACGTGGAT 2760  
GGTACACAGT ATGACTTTGC CCATGTCACC TTCACTGGGA ATGAGTCCAA GCCACTGTGT 2820  
GTGGAGCTGC ATGAGCAAAA CCGTCCCGGT TTCCCGGAGT GGATCACCAT CCCCTGTGTG 2880  
TGCACTTACA TGTTATCCAC CAACATCCTG CTGGTCAACC TGCTGCTGCG CATGTTTGGC 2940  
TACACGGTGG GCACCGTCCA GGAGAACAAT GACCAGTCTT GGAAGTCCA GAGGTACTTC 3000  
CTGGTCCAGG AGTACTCCAG CCGCCTCAAT ATCCCCCTCC ACTTCATCGT CTTCGCTTAC 3060  
TTCTACATGG TGGTGAAGAA GTGCTTCAAG TGTGTCTGCA AGGAGAAAAA CATGGAGTCT 3120  
TCTGTCTGCT GTTTCAAAAA TGAAGACAAAT GAGACTCTGG CATGGGAGGG TGTCTGAAG 3180  
GAAACTACC TTGTCAAGAT CAACACAAAA GCCAACGACA CCTCAGAGGA AATGAGGCAT 3240  
CGATTTAGAC AACTGGATAC AAAGCTTAAT GATCTCAAGG GTCTTCGTAAG AGAGATTGCT 3300  
AATAAAATCA AATGA

## SEQ ID NO:38 PBH1 Protein sequence

Protein Accession #: XP\_017718

35  
40  
45  
50  
55

1 11 21 31 41 51  
MSFRAARLSM RNRNDTLDL TRTLYSSASR STDLSYSESD LVNFIQANFK KRECVFPTKD 60  
SKATENVCKC GYAGSQHMEG TQINQSEKWN YKKHTKEFFT DAFGDIQFET LGRKKGYIRL 120  
SCDTDAELLY ELLTQHWHLK TPNLVISVTG GAKNFALKPR MRKIPSRLLY IAQSKGAWIL 180  
TGOTHYGLMK YGGEVVRDNT ISRSSEENIV AIGLAAGMVF SNRDTLIRNC DAEYFLAQY 240  
LMDDFTRDFL YLLDNHNLH LLVDNGCHGH PTVEARLRNQ LEKYISERTI QDSNYGGKIP 300  
IVCPAQGGGK EPLKAINTSI ENKIPCVVVE GSGQIADVIA SLVEVEDALT SSAVKSLVR 360  
FLPRTVSRLP EEETESWIKW LKELLECSSL LTVIRMEBAG DEIVSNALSY ALYKAPSTSE 420  
QDKDNMNGQL KLLLEWNLQD LANDEIFTND RRWESADLQE VMPTALIKDR PKPVRLEFLEN 480  
GLNLRRKFLTH DVLTEFLSNH FSTLVYRNLO IAKNSYNDAL LTFVWKLVAN FRGFRKEOR 540  
NGRDENDIEL HDVSFTTRFP LQALFIWAIL QNKKELSKVI WEQTRGCTLA ALGASKLLKT 600  
LAKVKNDINA AGESEELANE YETRAVELEF ECYSSDEDLA EQLLVYSCZA WGSNCLELA 660  
VEATDQHFIA QPGVQNFLEK QWYGEISRDY KNWIKILCLF IIPLVGCGFV SFRKKPVDKH 720  
KILLWYTYAF FTSPPVVPFSH NVVFTAFLL LFAYVLLMDP HSPVHPPELV LYSILVPLFC 780  
DEVQWQVYNG VNYPTDLWNV MDTLGLFYPFI AGIVPRLHSS NKSSLYSGRV IFCLDYIIFT 840  
LRLIHFTVS RNLGPKIIML QRMLIDVFFF LFLFAVMVA FGVARQGILR QNEQRWRWIF 900  
RSVIYFPLA MPQVPSDVD GTTYDFAHCT FTGNESKPLC VELDEHNLPR FPEMITIPLV 960  
CIVMLSTNHL LVNLLVAMPF YTVGTQENN DQWKFQRYF LVQEYCSRLN IPPFFIVPAY 1020  
FYHVVKKCFK CCKEKRMES SVCCFKNEIN ETLAWEGVHK ENYLVKINTK ANDTSEEMRH 1080  
RFRQLDRLN DLKGLLEKIA NKIK

## SEQ ID NO:39 PBH3 DNA SEQUENCE

Nucleic Acid Accession #: XM\_011804

Coding sequence: 1-558 (underlined sequences correspond to start and stop codons)

60  
65  
70  
75

1 11 21 31 41 51  
ATGCGCTGGCC TGTTCCTGTT CCACCTGCTA GAATTCGTGT TACTACTGAA CCAATTTTCC 60  
AGAGCACTCG CGGCCAAATG GAAGGACGAT GTTATTAAT TATCGCGCCG CGAATTAGTT 120  
CGCGCCGAGA TTGCCATTG CGGCATGAGC ACCTGGAGCA AAAGGTCTCT GAGCCAGGAA 180  
GATGCTCCTC AGACACCTAG ACCAGTGGCA GAAATTGTAC CATCCTTCAT CAACAAAGAT 240  
ACAGAAACTA TAATTATCAT GTTGGAAATC ATTGCTAAT TGCCACCGGA GCTGAAGGCA 300  
GCCCTATCTG AGAGGCAACC ATCATTACCA GAGCTACAGC AGTATGTACC TGCAATTAAG 360  
GATTCCAACT TTAGCTTTGA AGAATTAAAG AAACCTTATC GCAATAGGCA AAGTGAAGCC 420  
GCACACAGCA ATCCTTCAGA ATTAATAATC TTAGGCTTGG ATACTCATT CCAAAAAAG 480  
AGACGACCTC ACGTGGCACT GTTTGAGAAA TGTTCCTCAA TTGGTTGTAC CAAAGGTCT 540  
CTTGCTAAAT ATTCGTA

## SEQ ID NO:40 PBH3 PROTEIN SEQUENCE

Protein Accession #: NP\_008842

75

1 11 21 31 41 51  
MPRLFLPHLL EPCLLINQFS RAVAANKWDD VIKLCGRLEV RAQIAICGMS TWSKRLSQE 60

DAFQTPRPVA EIVPSFINKD TETIIIMLEF IANLPPELKA ALSEKQPSLP ELQOYVPALK 120  
 DSNLSPREFK KLIRNRQSEA ADSNPSELKY LGLDTHSQKK RRPVYALPEK CCLIGCTKRS 180  
 LAKYC

5

SEQ ID NO:41 PBH5 DNA SEQUENCE

Nucleic Acid Accession #: NM\_005845

Coding sequence: 1-3978 (underlined sequences correspond to start and stop codons)

10 1 11 21 31 41 51  
 | | | | |  
 ATGCTGCCCC TGTACCAGGA GGTGAAGCCC AACCCGCTGC AGGACGCGAA CCTCTGCTCA 60  
 CGCGTGTTCCT TCTGGTGGCT CAATCCCTTG TTAAAAATG GCCATAAACG GAGATTAGAG 120  
 GAAGATGATA TGATATCAGT GCTGCCAGAA GACCGCTCAC AGCACCTTGG AGAGGAGTTG 180  
 CAAGGGTTCCT GGGATAAAGA AGTTTAAAGA GCTGAGAATG ACGCACAGAA GCCTTCTTTA 240  
 15 ACAAGAGCAA TCATAAAGTG TTAAGTGAAG TCTTATTTAG TTTTGGGAAT TTTTACGTTA 300  
 ATTGAGGAAA GTGCCAAAGT AATCCAGCCC ATATTTTITGG GAAAAATTAT TAATTAATTTT 360  
 GAAAAATTAT ATCCCATGGA TCTGTGGCT TTGAACACAG CGTACGCCCTA TGCCACGGTG 420  
 CTGACTTTTTC GCACGCTCAT TTTGGCTATA CTGCATCACT TATATTTTTA TCACGTTTCAG 480  
 TGTGCTGGGA TGAGGTATAG AGTAGCCATG TGCCATATGA TTTATCGGAA GGCACCTTCGT 540  
 20 CTTAGTAAAC TGGCCATGGG GAAGACAACC ACAGGCCAGA TAGTCAATCT GCTGTCCAAT 600  
 GATGTGAACA AGTTTATCA GGTGACATG TTTTACACT TCCTGTGGGG AGGACCACATG 660  
 CAGGCGATCG CAGTGACTGC CCTACTCTGG ATGGAGATAG GAATATCGTG CCTTGTCTGG 720  
 ATGGCAGTGT TAATCATTTCT CCGGCCCTTG CAAGCTGTIT TTTGGGAAGTT GTTCTCATCA 780  
 CTGAGGAGTA AAACCTGCAAC TTTCAAGGAT GCCAGGATCA GGACCATGAA TGAAGTTATA 840  
 25 ACTGTATAAC GAGATAATAA AATGTACGCC TGGGAAAAGT CATTTTCAAA TCTTATTACC 900  
 AATTTGAGAA AGAAGGAGAT TTCCAAGATT CTGAGAAGTT CCTGCCTCAG GGGGATGAAT 960  
 TTGGCTTCGT TTTTCAGTGC AAGCAAAATC ATCTGTGTTG TGACCTTCAC CACCTACGTG 1020  
 CTCCTCGGCA GTGTGATCAC AGCCAGCCGC GTTGTCTGTT CAGTGACGCT GTATGGGGCT 1080  
 GTGGCGGTGA CGGTATACCT CTCTTCTCCC TCAGCCATG AGAGGGTGTG AGAGGCAATC 1140  
 30 GTACATATCC GAAGAAATCA GACCTTTTTC TACTTGTATG AGATATCACA GCGCAACCGT 1200  
 CAGCTGCCGT CAGATGTATA AAAGATGGTG CATGTGCAGG ATTTTACTGC TTTTGGGAT 1260  
 AAGGCATCAG AGACCCCAAC TCTACAAGGC CTTCCTTTTA CTGTACAGCC TGGCGAATG 1320  
 TTAGCTGTGG TCGGCCCGGT GGGAGCAGGG AAGTCATCAC TGTTAAAGTC GTGTCTCGGG 1380  
 GAAATGGCCC CAGTCAACGG GCTGGTCAGC GTGCATGAA GAATTGCCCTA TGTGTCTCAG 1440  
 35 CAGCCCTGGG TGTCTCGGG AACTCTGAGG AGTAATATTT TATTTGGGAA GAAATACGAA 1500  
 AAGGAACGAT ATGAAAAAGT CATAAAGGCT TGTGCTCTGA AAAAGGATTT ACAGCTGTTG 1560  
 GAGGATAGTG ATCTGACTGT GATAGGAGAT CGGGGAACCA CGCTGAGTGG AGGGCAGAAA 1620  
 GCACGGGTAA ACCTTGCAAG AGCAGTGTAT CAAGATGCTG ACATCTATCT OCTGGACGAT 1680  
 40 CCTCTCAGTG CAGTAGATGC GGAAGTTAGC AGACACTTGT TCGAAGCTGT TATTTGTCAA 1740  
 ATTTTGCATG AGAAGATCAC AATTTTAGTG ACTCATCAGT TGCAGTACCT CAAGCTGCA 1800  
 AGTCAGATTC TGATATTGAA AGATGTATAA ATGGTCGAGA AGGGGACTTA CACTGAGTTC 1860  
 CTAAATCTG GTATATATTT TGGCTCCCTT TTAAAGAAAG ATAATGAGGA AAGTGAACAA 1920  
 CCTCCAGTTC CAGGAATCC CACACTAAGG AATCGTACCT TCTCAGATGC TTCGGTTTGG 1980  
 45 TCTCAACAT CTCTAGACC CTCTTGAAA GATGGTGCTC TGGAGAGCCA AGATACAGAG 2040  
 AATGTCCGAC TTACACTATC AGAGGAGAAC CGTCTGAGG GAAAAGTTGG TTTTCAGGCC 2100  
 TATAGAAAT ACTTCAGAGC TGGTGTCTAC TGGATGTCT TCAATTTTCT TATCTCTCTA 2160  
 AACACTGCAG CTACAGTTGC CTATGTGCTT CAAGATGGT GGCCTTTCATA CTGGGCAAC 2220  
 AAACAAGATG TGCTAAATGT CACTGTAAAT GGAGGAGGAA ATGTAACCGA GAAGCTAGAT 2280  
 50 CTTAACTGGT ACTTAGGAAT TTATTCAGGT TTAACGTAG CTACCGTCT TTTTGGGATA 2340  
 GCAAGATCTC TATTTGGTAT CTACGTCTCT GTTAACCTCT CACAAACTTT GCACAACAAA 2400  
 ATGTTTGAAT CAATTCGAA AGCTCCGGTA TTAATCTTTG ATGAAATCC AATAGGAAGA 2460  
 ATTTTAAATC GTTTCTCCAA AGACATTTGA CACTTGGATG ATTTGCTGCC GCTGACGTTT 2520  
 TTAGATTTC TCCAGACAT GCTACAAGTG GTTGGTGTGG TCTCTGTGGC TGTGGCCGTG 2580  
 55 ATTCTTGGG TCGCAATACC CTTGGTTCCC CTGGGAATCA TTTTCATTTT TCTTCGGCGA 2640  
 TATTTTITGG AAACGTCAAG AGATGTGAAG CGCTGGAAT CTACACTCG GAGTCCAGTG 2700  
 TTTTCCACTC TGTCACTCTC TCTCCAGGGG CTCTGGACCA TCCGGGCTTA CAAAGCAGAA 2760  
 GAGAGGTGTC AGGAACTGTT TGAATGCAC CAGGATTTAC ATTCAGAGGC TTGGTTCTTG 2820  
 TTTTTCAGAA CGTCCCCTG GTTCGCCGTC CGTCTGGATG CCATCTGTGC CATGTTTGTG 2880  
 60 ATCATCTGT CTTTGGGTC CTTGATCTG GCAAAAAC TC TGGATGCCGG GCAGGTTGGT 2940  
 TTGGCACTGT CCTATGCCCT CAGGCTCATG GGGATGTTTC AGTGGTGTGT TCGACAAAGT 3000  
 GCTGAAGTGG AGAATATGAT GATCTCAGTA GAAAGGGTCA TTGAATACAC AGACCTTGAA 3060  
 AAAGAAGCAC CTTGGGAATA TCAGAAACCC CCACCACAG CCTGGCCCCA TGAAGGAGTG 3120  
 ATAATCTTTG ACAATGTGAA CTTCATGTAC AGTCCAGGTG GGCCTCTGGT ACTGAAGCAT 3180  
 65 CTGACAGCAC TCATTAATC ACAAGAAAAG GTTGGCATTG TGGGAAGAAC CGGAGCTGGA 3240  
 AAAAGTTCCC TCATCTCAGC CTTTPTTAGA TTGTGAGAAC CCGAAGGTAA AATTTGGATT 3300  
 GATAAGATCT TGACAACCTA AATTGGACTT CACGATTTAA GGAAGAAAAT GTCAATCATA 3360  
 CCTCAGGAAC CTGTTTGTGT CACTGGAACA ATGAGGAAAA ACCTGGATCC CTTTAATGAG 3420  
 CACAGCGATG AGGAACGTGT GAATGCCTTA CAAGAGGTAC AACTTAAAGA AACCATGAA 3480  
 70 GATCTTCTCT GTAAAAATG TACTGAATTA GCAGAAATCAG GATCCAATTT TAGTGTGGGA 3540  
 CAAAGACAC TGTGTGCTCT TGCCAGGGCA ATCTCTCAGGA AAAATCAGAT ATTGATTATT 3600  
 GATGAAGCGA CGGCAATATG GGATCCAAGA ACTGATGAGT TAATACAAA AAAAATCCGG 3660  
 GAGAAATTTG CCCACTGCAC CGTGTAAACC ATTGACACAC GATTGAACAC CATTAATTGAC 3720  
 AGCGACAGAA TAATGTTTTC AGATTCAGGA AGACTGAAAG AATATGATGA GCCGTATGTT 3780  
 75 TTGCTGCAAA ATAAAGAGAG CCTATTTTAC AAGATGTTGC AACAACCTGG CAAGGCAGAA 3840  
 GCCGCTGCC TCACCTGAAAC AGCAAAACAG GTATACTTCA AAAGAAATTA TCCACATATT 3900  
 GGTCAACATG ACCCAATGGT TACAACACT TCAATGGAC AGCCCTCGAC CTTAATCTATT 3960  
 TTCGAGACAG CACTGTGA

**SEQ ID NO:42 PBH5 PROTEIN SEQUENCE**

Protein Accession #: NP\_005836

5 1 11 21 31 41 51  
MLFVYQSEVK NPLQDANLCS RVFFFWLNLPL FKIGHKRRLE EDDMYSVLPB DRSQHLGEBL 60  
QGFWDKKVLK AENDAKKPSL TRAIKCYWK SYLVLGIFTL IESAKVIQP IFLGKIINYF 120  
ENYDPMDSVA LNTAYAYATV LTFCTLILAI LHLIFYFYHQ CAGMRLRVAM CHMIYRKALR 180  
LSNMANGKTT TGQIVNLLSN DVNKFDQVTV FLHFLWAGPL QALAVTALLW MEIGISCLAG 240  
MAVLIILLPL QSCPGKLFSS LRSKFTATFD ARIRTMNEVI TGIRIIRMYA WEKSPSNLIT 300  
NLRKKEISKI LRSCLRCGMN LASFFSASKI IVFVTPTTYV LLGSVITASR VFVAVTLYGA 360  
VRLVTVLTFF SATIERVSEAI VSIRRIQTFI LLDEISQRNR QLPDSGKKMV BVQDFTAFWD 420  
KASFTPTLQG LSFTVRPGEL LAVVGPVGAG KSSLSSAVLG ELAPSHGLVS VHGRIAYVSQ 480  
QPWVFSGTLR SNILPGKKYE KERYEKVKA CALKKDLQLL EDGDLTVIQD RGTTLSGGQK 540  
ARVNLARAVY QDADIYLLDD PLSAVDAEVS RHLFELCICQ ILHEKITILV THQLQYLKAA 600  
SQLLILKDGK MVQKGTTFEF LKSGIDFGSL LKKDNEESEQ PPVPGTPTLR NRTFSESSVM 660  
SQQSSRPSLK DGALESQDTE NVPTLSEEN RSEKVGFPQA YKNYFRAGAH WIVPFIILL 720  
NTAAQVAVVL QDWLISYWAN QKSLMNVTVN GGGNVTEKLD LNWYLGIIYS LTUATVLFGI 780  
ARSLVFFVYL VNSSQTLHNK MPESILKAPV LFFDRNPGR ILNRFSDKID HLDLLPLTF 840  
LDPIQLTLQV VGVSVAVAV IPWIAIPLVF LGIIFIPLRR YPLETSRDVK RLESTTRSFV 900  
PSLSSSLQG LWTIRAYKAE ERCQELFDAH QDLHEAMEPL FLTTSRMFAV RLDACAMFV 960  
IIVAFSLIL ATTLDAQGVG LALSALYALTM GMFQWCVRQS AEVENMMSV ERVIEYTDLE 1020  
KEAPWBYQKR PPPAMPHEGV IIFDNVNFMY SPGGPLVLKH LTALIKSQEK VGIUGRTGAG 1080  
KSLISALFR LSEPPGKIWI DKILTTEIGL HDLRKKMSII PQEPLVLTGT MRKNLDPFNE 1140  
HTDEELMVAL QSVQLKETIE DLPGKMDTEL AESGNSFVSG QRQLVCLARA ILRNQILII 1200  
DEATANVDR TDELQKKIR EKFAHCTVLT JAHRLNTIID SDKIMVLDSS RLKEYDEPVV 1260  
LLQKESLIFY KMVQLGKAE AALTTETAKQ VYFKRNYPHI GHTDMVTNT SNGQPSTLTI 1320  
FETAL

**SEQ ID NO:43 PBQ7 DNA SEQUENCE**

Nucleic Acid Accession #: NM\_021233

Coding sequence: 34-1119 (underlined sequences correspond to start and stop codons)

35 1 11 21 31 41 51  
ATGGGGAAG TGCTCTGCTG TGGCATGAAA TAAATGAAC AGAAAATGAT GGCAAGACTG 60  
CTAAGAACAT CCTTGTCTTT GCTCTTCCTT GGCCTCTTTG GGGTGTCTGG GGCAAGCACTA 120  
ATTTTCATGCA GAAATGAAGA AGGGAAAGCT GTGGACTGGT TACTCTTTTA TAAGTTACCT 180  
AAAAGCAAAA ACAAGGAAAG TGGAGAGACT GGGTTAGAGT ACCTGTACCT AGACTCTACA 240  
ACTAGAACCT GGAGGAAGAG TGAGCAACTA ATGAATGACA CCAAGAGTGT TTTGGGAAGG 300  
ACATTACATGA AGCATATGCC TCTAAGAGTA ACAACACAGC CTATCTAATA 360  
TACAATGATG GAGTCCCTAA ACCTGTGAAT TACAGTAGAA AGTATGGACA CACCAAAAGGT 420  
TTACTGCTGT GGAACAGAGT TCAAGGTTTC TGGCTGATTC ATTCCATCCC TCAGTTTCCT 480  
CCAATTCCGG AAGAAGGCTA TGATTATCCA CCCACAGGGA GACGAAATGG ACAAGTGGC 540  
ATCTGCATAA CTTTCAAGTA CAACCACTAT GAGGCAATAG ATTCTCAGCT CTGTGCTGTC 600  
AACCCCAACG TCTATAGCTG CTCCATCCCA GGCACCTTTC ACCAGGAGCT CATTCACATG 660  
CCCCAGCTGT GCACACAGGC CAGCTCATCA GAGATTCTCT GCAGGCTCCT CACCACATCT 720  
CAGTCGGCGT AGGACAAAAA ATTCTCTCAT TTTGCAAAAT CGGATTCTTT TCTTGACGAC 780  
ATCTTTCGAG CCTGGATGGC TCAACGGCTG AAGACACACT TGTAAACAGA AACCTGGCAG 840  
CGAAAGAAGC AAGAGCTTCC TTCAAACCTG TCCCTTCCTT ACCATGTCTA CAATATAAAA 900  
GCAATTAAT TATCACGACA CTCTTATTTT AGTTCTTATC AAGATCACCC CAAGTGGTGT 960  
ATTTCCCAAA AGGGCACCAA AAATCGCTGG ACATGTATTG GAGACCTAAA TCGGAGTCCA 1020  
CACCAAGCTT TCAGAAGTGG AGGATTCAAT TGTACCCAGA ATTGGCAAAT TTACCAAGCA 1080  
TTTCAAGGAT TAGTATTATA CTATGAAAGC TGTAAAGTAA CTGTGTGAAA GGACACAGGT

**SEQ ID NO:44 PBQ7 Protein sequence**

Protein Accession #: NP\_067058

60 1 11 21 31 41 51  
MMARLLRTSP ALLFLGLFV LGAATISCRN EEGKAVDWFT FYKLPKRQNK ESGETGLEYL 60  
YLDSTTRSRW KSEQLMNDTK SVLGRTLQQL YEAVASKSAN TAYLIYNDGV KPVVNSRKY 120  
GHTKGLLLWN RVQGFWLHLS IPQFPPIFEE GYDYPPTGRR NGQSGICITP KYNQYEAIDS 180  
QLLVCPNVY SCSIPATFHQ ELIHPQLCT RASSSEIPGR LLTTLQSAQG QKFLHFAKSD 240  
SPLDDIFAAW MAQRLKTHLL TETWQRKRQE LPSNCSLPYH VYNIKAIKLS RHYFSSYQD 300  
HAKWCISQKG TKNRWTCIGD LNRSPHQAFR SGGFICTQNW QIYQARQLV LYYESCK

**SEQ ID NO:45 PQ08 DNA SEQUENCE**

Nucleic Acid Accession #: XM\_030453

Coding sequence: 89-1273 (underlined sequences correspond to start and stop codons)

75 1 11 21 31 41 51  
CGGTGCCCTG GGGTGSAAATA TCCCTACGA ATTTAAACCA GCGGACTTTA ATGCCACTGT 60  
GCAGTTCATC CAAAACCACT TGGATGACAT GGATGTCAAA AAGGGTGTCT CCTGGACCAC 120  
CATCCGCTAC ATGATAGGAG AGATTCAATA TGGAGGCAGA GTCACTGACG ACTATGATAA 180  
GAGATTGTTG AACACATTTG CTAAGGTTTG GTTCAAGTAA AATATGTTTG GACCAGATT 240  
CAGTATTTCAC CAAGGATACA ATATTCCAAA ATGCAGCACA GTGGATAACT ATCTTCAGTA 300  
TATCCAGACT TTGCCTGCCT ATGACAGCCC TGAGGTGTTT GGGCTGCACC CCAATGCTGA 360

CATCACCTAC CAGAGCAAGC TGGCCAAGGA CGTGTGGAC ACCATCCTAG GCATCCAAAC 420  
 CAAGGACACC TCTGGTGGAG GGGATGAGAC CCGGGAGGCG GTGGTGGCCC GGCTGGCTGA 480  
 TGATATGCTG GAGAAGCTGC CCCAGACTA TGTCCCCTTT GAAGTAAAG AGAGGCTGCA 540  
 GAAGATGGGG CCATTCACGC CTATGAACAT TTCTCTCAGG CAGGAATAG ACAGAATGCA 600  
 AAGGGTACTC AGCCTTGTCC GCAGACCCCT CACTGAGCTG AAACCTTGCTA TTGATGGCAC 660  
 CATCATCATG AGCGAAAATC TGCAAGATGC ATTGGAATGC ATGTTTTGATG CTAGAATCCC 720  
 TGCTTGGTGG AAAAAAGCTT CTGGGGTTTT TAGTACACTG GGTTCCTGGT TTACTGAACT 780  
 TATAGAAAGA AACAGCCAGT TTACCTCGTG GGTTTTCAAT GGCCGACCTC ACTGCTTTTG 840  
 GATGACGGGT TTTTTTAACC CCCAGGGATT TTTAACTGCA ATGCGACAGG AAATAACTCG 900  
 GGCCACAAA GSCCTGGGCTC TGGACAATAT GGTGCTTTGC AATGAAGTCA CCAATGGAT 960  
 GAAGGACGAC ATTTCTACCC CTCCACAGA GGGTGTCTAT GTCTATGGCT TATATCTTGA 1020  
 AGGTGCTGGC TGGGACAAGA GGAACATGAA ACTCATTGAA TCAGAGCCAA AAGTGCTCTT 1080  
 TGAGTTGATG CCTGTCTATA GGATTTATGC AGAAAAAART ACTTTACGAG ATCCTCGGTT 1140  
 TTACTCTCTG CCCATCTATA AGAAGCCAGT TCGAACGGAC TTGAATACA TTGCGCTGT 1200  
 GGATCTCAGG ACAGCCACGA CCCCTGAACA CTGGGTGCTC CGTGGGTTG CCCTCTGTG 1260  
 TGATGTCAAG TAACATGTGG GGATGTGCC CACCCAAATG TTTGGAAAAT GCAAGATCTA 1320  
 AATTATTGTA ACCTTTATTT CTGTATGACT GCTGGACAGT GTATGTTAGG TCGTTTATG 1380  
 AATTAAAGAG CTGCATAGGT TTTCCCACT CTTAAATGG ATGCTTATAT TTTACTTGT 1440  
 TCATCATGAG TGACCAATGT CTGAGTTTGT TGAATAATTT ATTTAGTAT ATAAAAGTAA 1500  
 ATTTACAGAA CTTTAAATGA CTGTGGCCCT CAAATCCACA GTAGTATATT TTCTCTTAC 1560  
 TTCGCTCCGA AGACTGACTG TGATTATAAC AGCAATATA TTTGCATGTG GACAAAGATT 1620  
 AGATGGCAAG ATAGAAAAAT AAGAACAGAT GTGATAGCAA GAATTATAGT TGGCTTGAAA 1680  
 AAATGTGATG ATCAGGAGAA AAAATAAAAA AAGGCTAGAA ATATTAGAG GTCCGTAGGG 1740  
 ACTTCTATG GACTTTTATT AATTAGGAAA CATTATCAAA GGAACCTTTT ACGTATTTTT 1800  
 CTTTAAATTC TGGTTAGATG TTATTAAATA TTCTTCTATC AACCTACTGA CTAGAAAAATA 1860  
 TAGTCAGTAT TAAATAGAAA TTGTGGTTTA TAAACTTTTG GTTAGCTCTG GATCTGTATA 1920  
 ACTGCATTTT TTGGATAAAA CAGTTTGTGG TAGGTGGATA CCGGGAGACA AGTGTGGGTC 1980  
 CCTCTCACTG GCTTCTATTC TGTGGACGAG GATCATTTAT TCATGCTCAT GATCATGAGA 2040  
 GTTAGGACTG AGTGGCTTCT GTGACTCCCA CCATCTTAGA TGATACTGTT TTCTGTGTAG 2100  
 TCTTTCTCTT TGGTGTGGAT TAGTATATCA GTTGATTTGT GTGAATTGAG GTGAAACAA 2160  
 CATTTTCATT TGAAAAACAA GTAAATGAAA TGTGAGCATC ATAGGAATTA ATAAAATGTT 2220  
 TTTACTAAAA AAAAAAAAAA AAA

SEQ ID NO: 46 PQO8 Protein sequence  
 Protein Accession #: BAB15343

1 11 21 31 41 51  
 MDVKKGVSWT TIRYMIGEIQ YGGRVTDYD KRLNTFARK WFSNMFGPD FSYQGYNIP 60  
 KCSTVDNYLQ YIQSLPAYDS FEVFLHPNA DITYQSKLAK DVLDTILGIQ PKDTSGGGDE 120  
 TREAVVARLA DDMLEKLPD YVPFEVKERL QKMGFPQPMN IFLRQIEDRM QRVLSLVRST 180  
 LTELKLAIDG TILSENLDQ ALDCMFDARI PAWKKASWY FSTLGFWPTF LIERNOSFTS 240  
 WVPNGRPHCF WHTGFFNPGF PLTAMRQBIT RANKGMALDN MVLNCEVTRW MKDDISTEPT 300  
 EGVVYVGLYL EGAGWDRKRM KLIESKPKVL FELMFVIRLY AENNTLRDFR FYSCTPIYKFP 360  
 VRTDLNLYIA VDLRTAQTFE HWVLRGVALL CDVK

## SEQ ID NO: 47 PDG5 DNA SEQUENCE

Nucleic Acid Accession #: AB033036  
 Coding sequence: 68-3349 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
 GGAGCAGCCT ACAACTTCAC AACCAGAAAC CACTACCCCT CAGGGGTTGC TTTCAGATAA 60  
 AGATGACATG GGAAGGAGAA ATGCTGGCAT AGATTTCCGA TCCAGAAAAG CATCAGCAGC 120  
 ACAGCCCAAT CCTGAAAACA TGGACAATTC CATGTTAGT GATCCACAAC CATACCATGA 180  
 AGATGCACTC TCTGGAGCTG AGAAGACAGA AGCCAGAGCT TCTCTCTCAC TGATGGTGA 240  
 AAGCCTTCTC ACAACCCAAAG AGGAGGCCAT TCTCTCAGTA GCAGCAGAGG CTCAGGTGTT 300  
 TATGAATCCT TCTCATATCC AGTTAGAAGA TCAAGAAAGT TTCAGCTTTG ATTTACAAAA 360  
 GGCCCAATCC AAAATGGAGT CAGCCAGGA TGTTCAAACT ATCTGCAAG AAAAGCCTTC 420  
 TGGAAATGTT CACCAGACCT TTACAGCAAG TGTTTTGGGT ATGACAAGTA CTACAGCCAA 480  
 AGGAGATGTT TATGCCAAGA CTCTGCCCTC CAGAAGCCTT TTTCAGTCTT CAAGGAAGCC 540  
 TGATGCTGAA GAAGTCTCCT CAGATTGAGA GAATATTCCT GAGGAGGGGG ATGGTTCTGA 600  
 AGAAGTGGCT CATGGTCACT CTTCOCAGTC GTTGGGGAAG TTTGAAGATG AACAGAAGT 660  
 CTCTCTCAGAA TCAAAAAGTT TTGTTGAGGA CTTGAGCAGC TCTGAGGAGG AGCTGGACCT 720  
 CAGATGCCTC TCCCAAGCTT TAGAGGAGCC TGAAGATGCA GAAGTCTTCA CAGAATCAAG 780  
 CAGTTATGTT GAAAAGTACA ACACCTCTGA TGATTCAGAG AGCTCAGAGG AAGACCTGCC 840  
 TCTCAGACAC CCTGCTCAGG CCTTGGGAAA GCCCAAAAAC CAACAAGAG TCTCCTCTGC 900  
 TTCAATAAAT ACTCTCTAAG AGCAGAATGA TTTTATGCAG CAGCTGCCTT CCAGATGCC 960  
 TTCTCAGCCC ATTTATGAATC CTACTGTTCA GCAACAAGTC CCCACAGTT CAGTGGGCAC 1020  
 TTCTATAAAA CAGAGCGATT CCGTGGAGCC AATCCCTCCA AGACACCTT TCCAGCCATG 1080  
 GGTGAACCTT AAGTGGAGC AAGAAGTTTC CTCACTCCA AAGAGCATGG CTGTTGAAGA 1140  
 GAGCATTTCT ATGAAGCCTC TGCCCTCTAA ACTTCTTTGC CAGCCCTTGA TGAATCCTAA 1200  
 AGTTCAACAA AACATGTTCT CAGGTTGAGA GGACATTGCT GTTGAGAGG TCATTCTGT 1260  
 GGAGCCACTA CTCCCCAGAT ATTCTCTCA GTCCCTGACA GATCCTCAAA TCCGGCAAT 1320  
 CTCAGAAAGC ACAGCTGTTG AGGAAGGCAC TTATGTGAA CCGCTGCCTC CCAGATGCC 1380  
 TTCCAGGCC TCAGAGAGGC CTAAGTTCTT GGACTCAATG AGTACTTCTG CAGAATGGAG 1440  
 CAGTCCCTGT GCACCAACAC CTTCCAATA CACTTCCCCC CCATGGGTGA CCCCTAAATT 1500  
 TGAGAAACTG TGCACATCC CTGACATCC AGAAAGCACT ACTGTTGAAG AGGACATTTT 1560  
 TAAGGAGCAG CTGCTTCCCA GACATCTTTC CCAAGTTGACT GTGGGAAATA AAGTCCAGCA 1620  
 ACTGTCTCTA AATTTGAGC GGGCTGCTAT TGAGGCAGAC ATTTCTGGA GTCCATTGCC 1680

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TCCCAATAT GCTACCCAGT TCTTAAAGAG GTCTAAAGTT CAGGAAATGA COTCAGCACT 1740  
 AGAGAAATG GCTGTTGAAG GCACTTCTAA CAAATCACCG ATTCCGAGGC GTCCGAGCCA 1800  
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SEQ ID NO:48 PDG5 Protein sequence  
 Protein Accession #: BAA85524

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## SEQ ID NO:50 PAB7 Protein sequence

Protein Accession #: BAA13448

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 55 IEESKQETSM ILDSERTSET AARGVNTGGR EPNTMVEKER PLADKKQARP FERSDFSDSI 120  
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## SEQ ID NO:51 PAB9 DNA SEQUENCE

Nucleic Acid Accession #: NM\_006457

Coding sequence: 84-1874 (underlined sequences correspond to start and stop codons)

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	GTACAGGCTC TTTGAATATG ACTCTGCAAA GAGCATCTGC TGCACCCAAG CCTGAGCCGG 360
	TTCTCTGTCA AAGGGGAGAA CCTAAAGAAG TAGTTAAACC TGTGCCCATT ACATCTCCTG 420
	CTGTGTCCAA AGTCACTTCC ACAAAACACA TGGCCTACAA TAAGGCACCA CGGCTTTTGG 480
	GTCTCTGTGC TTCCACCAAA GTCACATCCA TCCCATCACC ATCGTCTGCC TTCACCCGAG 540
10	CCCATGCGAC CACCTCATCA CATGCTTCCC CTTCACCCGT GCCTGCCGTC ACTCCTCCCC 600
	TGTTGCGCTG ATCTGGAGTG CATGCTAATG CCAATCTTAG TGCTGACCAG TCTCCATCTG 660
	CACCTAGCGC TGGTAAACT GCAATTAATG TCCCACGGCA GCGCACAGTC ACCAGCGTGT 720
	GTTCGGAGAC TTCTCAGGAG CTAGCAGAGG GACAGAGAAG AGGATCCCAG GGTGACAGTA 780
	AACAGCAAAA TGGCCCAACA AGAAAACACA TTGTGGAGCG CTATACAGAG TTTTATCATG 840
15	TACCCACTCA CAGTGATGCC AGCAAGAAGA GACTGATTTA GGATACTGAA GACTGGCGTC 900
	CAAGAACTGG AACAACTCAG TCTCGCTCTT TCCGAATCCT TGCCAGATC ACTGGGACTG 960
	AACATTTGAA AGAATCTGAA GCGGATAATA CAAAGAAGCG AATAACTCTC CAGGAGCCTT 1020
	CTCCGACGTT GCCTCTCTTG GTAGCTTCCA CACGAGCAT GCCTGAGAGC CTGGACAGCC 1080
	CAACCTCTGG CAGCTCAGGG GTTACCAGCC TCACAACATC AGCTGCCTTC AAGCCTGTAG 1140
20	GATCCACTGG CCGTATCAAG TCACCAAGCT GGCACCGGCC AAACCAAGGA GTACCTTCCA 1200
	CTGGAAGAT CTCAACACAG CTAATCTACT CAGGATCAGT GGCACCAAGC AACTCAGCTT 1260
	TGGGACAAAC CCGAGCAAGT GACCAAGACA CTTTAGTGCA AAGAGCTGAG CACATTCGAG 1320
	CAGGAAAGCG AACTCCGATG TGGGCCCATT GTAACCAAGT CATCAGAGGA CCATTTCTAG 1380
	TGGCACTGGG GAAATCTTGG CACCCAGAAG AATTCARCTG CGCTCACTGC AAAAATACAA 1440
25	TGGCTACATG TGGATTTGTA GAGGAGAAAG GAGCCCTGTA TTGTGAGCTG TGCTATGAGA 1500
	AATTTCTTGC CCGTGAATGT GGTGATGCC AAAGGAAGAT CCTTGGAGAA GTCATCAATG 1560
	CGTTGAAGA AACTTGGCAT GTTTCCTGTT TTGTGTGTGT AGCCTGTGGA AAGCCCATTC 1620
	GGATCAATGT TTTTCACTTG GAGGATGGTG AACCTACTG TGAGACTGAT TATTATGCC 1680
	TCTTTGTGAC TATATGCCAT GGATGTGAAT TTCCCATAGA AGCTGGTGAC ATGTCTCTGG 1740
30	AAGCTCTGGG CTACACTTGG CATGACACTT GCTTTGTATG CTCAGTGTGT TGTGAAAGTT 1800
	TGGAAGGTCA GACCTTTTTC TCCAAGAAGG ACAAGCCCCC GTGTAAGAAA CATGCTCAT 1860
	CTGTGAATTT TTGAAGTCA ACAGTTCAGG AGAAGAGAAG GAATTTGAAG AGAAAAAGGA 1920
	AAATTAATAA TACTAATTA TTTTGAAT CAATATTTAT ATGGAGTTT GAAAAATAAT 1980
	AGTGGCCCTG AAGGAATAAA TTCCAGCTTT AAAAACCAAG TCTGAGGAAA TATTGTGCTT 2040
35	CATAAGTAA AGAGACGTTT TGCCATTTAT TATTACTTTT TCCGTGATT TATGCCCAT 2100
	AAATAAGCTT TATAAAAAAC AATTTCTCTG TGGACTATTA AATTCATCTT AGAATAAAT 2160
	AGTGAAGAT TTAAATTTAG AATAAATAAT CCAATCTGAA ATAATTTATC CTCTCTTCT 2220
	TTTGTAGTAG TTAATGATTA ATCTGCAAAA GGCAATGAAA ATCCCTTAAA TTTTATCAAT 2280
	AACAGAATTA TTGATTTTAA AAAAAAATA ATACTTATCT TTAATAAGT AAATAGGAT 2340
40	TTAAACAGAG AATTTTATCA GTAAATAGTG TCAGTTTTTA AAAAAATGCT TGTAGGCTGA 2400
	GCGCGGTGGC TCACGCTGTG AATCCAGCA CTTTGGGAGG CCAAGGTGGG TGGACCACAT 2460
	GAGGTACAGA GTTTGAGATC AGCCTGGCCA ACATGGTGAA ACCCCATCTC TACTAAAAAT 2520
	ACAAAAATTA CCGGACGCGA GTGGCAGCGC CCGTAAATCC CAGCTACTCA AGAGGCTGAG 2580
	GCACGAGAAT CACTTGAACC CGGGAGGGAG AGGTTCAGT GAGCCAAGAT CGTACCACTG 2640
45	CACCTCAGCC TGGGTGACAG AGTGAGACTC CGTCTCCAAA AAAAACTTT GCTGTATAT 2700
	TATTTTGGCC TTACAGTGGG TCATTTCTAGT AGGAAGAGCA AATAAGATTT TTTATCAAAA 2760
	TGTGTCAATC CAGTAAGAGA TGTATATTC TTTTCTTAT TCTTCCCCAC CAAAAATAA 2820
	GCTACCATAT AGCTTATAG TCTCAAAAT TTGCTTTTAA CTAAAAATG ATTGTTCCTG 2880
	TTCAATGTGT ATGCTTATC ACCTATATTA GGCAATTTCC ATTTTTCCTC TTGCGCTAAG 2940
50	GTAAAGATTT AATTAATAA TTTTGGCCTC TCATAGTTTT CTCTCTCTT AAAGAGAATA 3000
	AATAGAGGGC CAGGTGTGGT GGCTCACGCC TGTGATCCCA GCCTTTGGG AGGCCAAGAC 3060
	GGGCGGATCA TGAGGTCAAG AGATCAAGAT CATCTCGGCC AACATGTGTA AACCCGTGCT 3120
	CTACTAAAAA TACAAAAATG AGCTGGGCAT GGTGGGGCGT GCCTGTAGTC CCATGTACTT 3180
	GGGAGGCTGA GGCAGGAAAA TTCTTGAACC CAGGAGACGG AAGTGTGAGT GAGCTGAGAT 3240
55	CACACCACCT CACTCCAGCC TGGTGACAGA GCAAGACTCC GGCTCTT

SEQ ID NO:52 PA89 Protein sequence  
Protein Accession #: NP\_006448

60	1 11 21 31 41 51	1 MSNYSVSLVG PAPWGFRLQG GKDFNMPLTI SSLKDGKAA QANVRIGDVG LSIDGINAAG 60
		61 MTHLEAQNKI KGCTGSLNMT LQRASAAKPK EPVFPVQKEP KEVVKVPVIT SPAVSKVTST 120
		121 NNMAYNKAPR PFGSVSSPKV TSIPSPSSAF TPAHATTSSH ASPSPVAAT PPLFAASGLH 180
65		181 ANANLSADQS PSALSAGKTA VNVPRQPTVT SVCSETSQEL AEGQRRGSQG DSKQQNGPFR 240
		241 KHIVERYTEF YHVPTSDAS KKRLIEDTED WRPRGTGTS RSFRILAQIT GTEHLKSEA 300
		301 DNTKANNNSQ EPSPLASLV ASTRSMPEL DSPTSGRPGV TSLTTAAAFK PVGSGTVIKS 360
		361 PSWQRPNQGV PSTGRISNSA TYSGSVAPAN SALGQTPSD QDLVQRAEH IPAGKRTPMC 420
		421 AEICNQVIRGP FLVALGKSWH PEEFNCAHCK NIMAYIGFVE EKGALYCELC YEKFFAPECG 480
70		481 RCQKRLIGEV INALKQTVHVF SCFVCVACGK PIRNINVHLE DGEPCYCTDY YALFGTICHG 540
		541 CEPPPEAGDM FLEALGYTVH DTCFVCSVCC BSLEGQTFPS KDKPLCKKH AHSVNF

SEQ ID NO:53 PBH7 DNA SEQUENCE

Nucleic Acid Accession #: AA431407  
Coding sequence: 1-864 (underlined sequences correspond to start and stop codons)

75	1 11 21 31 41 51	1 ATGGCCAAC GTAAATGAC CAAAAGCAT AGGTTCCCTG CCCTGGAGCA CTGCTATACT 60
		GGCGGGGAGG TCGTGTGCC CAAGGATCAG GAGGAGTGA AAAGACGGAC GGGCCTTCTG 120
80		CTCTACGAGA ACTATGGGCA GTCCGAAACG GGAATAATT GTGCCACTA CTGGGAATG 180

5 AAGATCAAGC CGGGTTTCAT GGGGAAGGCC ACTCCACCCT ATGACGTCCA GTTTCATATG 240  
 GAGGCCTCAG TTGAAAACATG CATATATTGTG AGCATGAACA CCGCTGACCC TGGCAGCCAG 300  
 GGCATCACAC ACAGCCTCTT GCTACAGGTC ATTGATGACA AGGGCAGCAT CCTGCCACCT 360  
 AACACAGAAG GAAACATTGG CATCAGAATC AAACCTGTCA GGCTCTGTAG CCTCTTCATG 420  
 TGCTATGAGG GTGACCCAGA GAAGACAGCT AAAGTGAAT GTGGGGACTT CTACAACTACT 480  
 GGGGACAGAG GAAAGATGGA TGAAGAGGGC TACATTGTGT TCCTGGGGAG GAGTGATGAC 540  
 ATCATTAATG CCTCTGGGTA TCGCATCGGG CCTGCAGAGG TTGAAAGCGC TTTGGTGGAG 600  
 CACCCAGCGG TGGCGGAGTC AGCCGTGGTG GGCAGCCAG ACCCGATTCT AGGGGAGGTG 660  
 10 GTGAAGGCCT TTATTGTCTT GACCCACAG TTCTCTGTCC ATGACAAGGA TCAGCTGACC 720  
 AAGGAAGTGC AGCAGCATGT CAAGTCAGTG ACAGCCCAT ACAAGTACCC AAGGAAGGTG 780  
 GAGTTTGTCT CAGAGCTGCC AAAAACCATC ACTGGCAAGA TTGAACGGAA GGAAGTCTGG 840  
 AAAAAGGAGA CTGGTCAGAT GTAAATCCGCA GTGAAGTCTG AACCACTGTC ACACCTGAGG 900  
 CAAATCCCTG GCACTTTTAG TCTCCCACT ATGGTGAGGA CGAGGGTGGG GCATTGAGAG 960  
 15 TGTGTATTG GGAAGATATC AGGAGTGCCA TGATTCCAAT GTTTCTCTTC TTTTAAATTA 1020  
 AATTCACTTG CTCTGCTTCC TCCAAGTCTC CTGTATCTTT AGAATTTCCT AGGTGAGCAC 1080  
 TCATAACGCA AGTAATAAAA TACTGATATC AACAA

# SEQ ID NO:54 PBH7 Protein sequence

Protein Accession #: FGENESH predicted

20 1 11 21 31 41 51  
 | | | | |  
 MANCKMTKSI RFFALEHCYT GGEVVLPKDQ EEMKRRITGLL LYENYQSQSET GLICATYWGM 60  
 25 KIKPGFMGA TFPYDVQPHM EASVENCIV SMNTADPGSQ GITHSLLLQV IDDRGSLPFP 120  
 MTEGNIGIRI KPVRFVSLFM CYEGDPEKTA KVECGDFYNT GDRGKMDREG YICPLGRSDD 180  
 IINASGYRIG PAVVESALVE HEVAESAVV GSPDPIRGEV VKAFIVLTPQ FLSEDKDQLT 240  
 KELQQVVKSV TAPYKYPRKV EFVSELPKTI TGKIERKELR KKBTGQM

# SEQ ID NO:55 PBJ5 DNA SEQUENCE

Nucleic Acid Accession #: AF388200

Coding sequence: 33-137 (underlined sequences correspond to start and stop codons)

35 1 11 21 31 41 51  
 | | | | |  
 GAGAGAGGGA GGCAGAAGAG GAAGTCAGAG CGATGTGCTG TGAATCTAC TACCGTTTGC 60  
 TGCTTTTGAA AATGGAGAAA AAGAGTGAGG AACTGAGAAA CATGGATGCG CTGGGGAACG 120  
 TGGAAAAGGG TCACTGAAAT GGGACGACAT GAAGTCAAGG AGGCTATTTA TGACCATGTC 180  
 ATTTGCACCA TGAAGAAAGC TTATCTGGAG TGAAGTAAA TGAGACCAAC AGAGATAAGA 240  
 GACCCGGAGA AATCTGTGTT ACACCTGCTG AATCCTGTCA GTCTTACTT GGAGTCTGT 300  
 40 TAATACAAA TAATAGTAAT AATCCCTCTG TTTCTTATGT TTATGCCAAC TTCAACAAA 360  
 AGAAACTTGA CTAAGAGACA ATATAAGAAC TTAATGTGTA ATTAAAGAAG AACTTCCAC 420  
 CACGGGGAAAT GTGAAGGATA TATGAGTCCC TTTTCACGAT GCGATGTCAAT GTCTTTTAAA 480  
 TAAGCCATAC TTATGTGTTCA ATAAAAAGAG AATAAGCAGG A

# SEQ ID NO:56 PBJ5 Protein sequence

Protein Accession #: AAK83352

50 1 11 21 31 41 51  
 | | | | |  
 MCCEIYYRL VLMKKSEB LRNMGLGNV EKGH

# SEQ ID NO:57 PBJ7 DNA SEQUENCE

Nucleic Acid Accession #: AA876910

Coding sequence: 1-2064 (underlined sequences correspond to start and stop codons)

55 1 11 21 31 41 51  
 | | | | |  
 ATGGACAGTT GCCTGCAACA TATGAGAGAC CTACTTTACC TCCTTCAGGA GCTCAGGTGT 60  
 TTAATCCAG CTACTACT CTCTGATCCA GACTCCACTA CTCTGTGTCA TGACTGTCTAG 120  
 60 GATCTGTGG AACTACCAA AACTGGCCAA CCTGATCTTC AAGATGTGCC CCTAGAAAAG 180  
 GCAGATGCCA CTGTGTTCAC AGATGGTAGC AGCTTCCTCG AGCAGGGAGA ACGAAAAGCT 240  
 GTTCTTTTTC CACAGCCAGA TCTGCCTGAC AATCCACAT ACTCAACAGA AGAAGAAAAA 300  
 CTGGCTTCAG ATGTTGGAGC AAATAAAAAAT CAGGAAGGAC GTGTATTTCG AAACACTACT 360  
 TGGAGGGCCG GTACCTCCAA GGAAGTCTCC TTTGCAATTG ATTTATGTGT ACTGTTCCCA 420  
 65 GAGCCAGCTC GTACCCATGA AGAGCAACAT AATTGCGCG TCATAGGAGC AGGAAGGTGC 480  
 GACCTTCAG CAGGATTGG ACACCTGCGG AGCCAAACTG GATGTGGAAG CTCCAAAGGT 540  
 GCAGAAAAG GGCTCCAAA TGTGACTTT TACCTCTGTC CTGGAATCA CCTGACGCT 600  
 AGCTGTAGAG ATACTTACCA GTTTTCTGTC CCTGATGGA CATGTGTAAC TTTAGCCACC 660  
 TACTCTGGGG GACTCAACTAG ATCTCAACT CTCTCCATAA GTCTGTGTTC TCATCTATAA 720  
 70 TTATGTACTA GAAAAAATTG TAATCCTCTT ACTATAACTG TCCATGACCC TAATGCAGCT 780  
 CAATGTATT ATGGGATTA ATGGGATTA AGACTTTATA TCCAGGATT TGATGTTGGG 840  
 ACTATGTCCA CCATCCAAA GAAATCTTGT GTCTCATGGA GCTCCCCCAA GCCAATCGGG 900  
 CCTTTAAGCT ATCTAGGTGA CCTATATTC CAGAAACACC CTGACAAAGT TGATTTAAT 960  
 GTTCTCTGTC CATCTTAGT TCCTAGACCC CAGCTACAC AACACATCT TCAACCCAGC 1020  
 75 CTAATGTCTA TACTAGGTGG AGTACACCAT CTCTTAACC TCACCCAGCC TAAACCTAGC 1080  
 CAAGATTGTT GGCTATTGTT AAAAGCAAAA CCCCCTTATT ATGTAGGATT AGGAGTAGAA 1140  
 GCCACACTTA AACGTGGCCC TCTATCTTGT CATACACGAC CCGGTGCTCT CACAATAGGA 1200  
 GATGTCTGTG GAAATGCTTC CTGACTGATT AGTACCGGCT ATAACCTATC TGCTTCTCCT 1260  
 80 TTTACGGCTA CTGTATATCA GTCCCTGCTT ACTTCCATAA GCACCTCAGT CTCTTACCAA 1320  
 GCACCCAACA ATACCTGGTT GGCCCTGCACC TCAGGTCTCA CTGCTGCAAT TAATGGAAT 1380

5	GAACGAGGAC	CTCTCTCTGTG	CGTGTAGTGT	CATGTACTTC	OCCAGGTATA	TGTGTACAGT	1440
	GGACGAGAAG	GACGACAAC	CATCGCTCCC	CCTGAGTTAC	ATCCAGGTT	GCACCAAGCT	1500
	GTCCACTTC	TGTTCCCTC	ATTGGCTGGT	CTTAGCATAG	CTGGATCAGC	AGCCATTGGT	1560
	ACGGCTGCC	TGTTCAAGG	AGAACTGGA	CTAATATCCC	TGTCTCAACA	GGTGGATGCT	1620
	GATTTTAGTA	ACCTCCAGTC	TGCCATAGAT	ATACTACATT	CCCAGGTAGA	GTCTCTGGCT	1680
	GAAGTAGTTC	TTCAAAAC	CGGATGCTTA	GATCTGCTAT	TCCTCTCTCA	AGGAGGTTTA	1740
	TGTGACGCTC	TAGGAGAAAG	TTGTTGCTTC	TATGCCAATC	AATCTGGAGT	CATAAAAGGT	1800
	ACAGTAAAAA	AAGTTCCGAGA	AAATCTAGAT	AGGCACCAAC	AAGAACGAGA	AAATAACATC	1860
10	CCCTGGTATC	AAAGCATGTT	TAACCTGGAAC	CCATGGCTAA	CTACTTTAAT	CACCTGGGTTA	1920
	GCTGGACCTC	TCCTCATCTC	ACTATTAAGT	TTAATTTTGT	GGCCTTGAT	ATTAATTCG	1980
	TTTCTTAATT	TTATAAAACA	ACGCATAGCT	TCTGTCAAAC	TTACGTATCT	TAAGACTCAA	2040
	TATGACACCC	TTGTTAATAA	CTGA				

15 SEQ ID NO:58 PB17 Protein sequence  
Protein Accession #: FGENESH predicted

20	1	11	21	31	41	51	
	MDSCLOHMRD	LLYLLQELRC	LNPAITLLPDP	DSTTFVHDCQ	DLLETTTKTGQ	PDLQDVPLEK	60
	ADATVPTDGS	SPLQGERKA	VSPQPDLPD	NPTYSTEEK	LASDVGNKN	QEGRVFANTT	120
	WRAGTSKSVS	FAVDLCVLPF	EPARTHEEQH	NLPVIGAGSV	DLAAGFGHSG	SQTGCGSKG	180
	AEKGLQNVDF	YLCFQNHEDA	SCRDTYQFFC	PDWTCVTLAT	YSGGSTRSST	LSISRVPHEK	240
	LCTRKNCPNL	TITVHDPNAA	QWYTGMSWGL	RLYIPGFDVG	TNFTIQKKIL	VSWSSPKPIG	300
	PLTDLGDPPI	QKHPRKVDLT	VLPFLVPRP	QLQQHQLQPS	LMSILGGVRH	LLNLTPKPLA	360
25	QDCMLCLXAK	FPYVYGLGVE	ATLKRGLPSC	HTRFRALTIG	DVSGNASCIL	STGYNLSASP	420
	FQATCNQSLT	TSISTSVSYQ	APNNTWLACT	SGLRFCINGT	EPGPLLCVLN	HVLEPQVYVS	480
	GPEGRQLIAP	PELHPRLEQA	VLLLVPLLAG	LSIAGSAAIG	TAAVQGETG	LISLSQGVDA	540
	DFSNLQSAID	ILHSQVESLA	EVVLQNCRL	DLFLSQGGL	CAALGESCCF	YANQSGVIEG	600
30	TVKKVRENLD	RHQQERENNI	FWYQSMFNWN	PWLTTLTITGL	AGPLILLILS	LIFGPCILNS	660
	FLNPIRQLIA	SVKLTYYLRTQ	YDTLVNN				

## SEQ ID NO:59 PCQ1 DNA SEQUENCE

Nucleic Acid Accession #: NM\_019005  
Coding sequence: 182-1885 (underlined sequences correspond to start and stop codons)

35	1	11	21	31	41	51	
	TGATGTTGGA	AATTTCTTGA	AACCGCTCTC	GTAATTTGCC	ACGTGCTGTT	GCAAAATATC	60
	TGTTGAATGA	ACACAGAATC	AGCATGGCTT	TCCTTTGCTG	AGAAATCACT	GATGGGAAGT	120
40	GAGACTTGT	AAACTTGAAA	GTGAATGGAC	CTGAGTGGAC	CCTTTGATCA	CATCAGTAAA	180
	CATGACGGT	ACCAAACTCG	ATATTTTATG	GGCACCACAC	CATGTTGATA	GATTGTGTGT	240
	GTGTGACCTA	GAACCTAAGT	TTTATCATGT	GGAACTCTAT	GTGAATTCAG	AACTCAAAGC	300
	TGGAATCTTA	CGTTTATCTG	AAGACTCTCG	AGCTACATTA	CTGTCAATTA	ATTCCAGATAC	360
	ACCTATATG	AAATGTGTTG	CCTGGTATCT	TAATTATGAT	CCTGAATGTC	TGCTGGCAGT	420
45	TGGACAACCA	AATGCTGCAG	TTGTACTTAC	AAGCCTTGCT	CAAGATCATA	ACTCAAAGTT	480
	CAAGATTTG	ATAGGAAAAG	AGTTTGTPTC	AAAACATGCA	CGACAATGTA	ATACCCCTGC	540
	CTGGAATCCA	CTGGATAGTA	ACTGGCTAGC	TGCTGGTTTA	GATAAGCACA	GAGCTGACTT	600
	TTCACTGCTA	ATATGGGATA	TCTGCAGCAA	ATATACTCCT	GATATAGTTC	CCATGGAAAA	660
	AGTGAACCT	TACAGCAGGT	AACTGAAAC	AACAATTATTA	GTAAACAAAC	CACCTTTATGA	720
50	GTATAGACAG	AATGATGCTT	GTCTGTCTCT	TTGTTGGCTT	CCAGSAGACC	AGAACTTCT	780
	CCTTCCTGTT	ATGCTATGTA	ACCTAGCTAT	ATTGTGATCT	CGGAATACAA	GCCAAAGAT	840
	GTTCGTAAAT	ACAAAAGCTG	TTCAAGGTTG	GACGGTAGAC	CCATATTTCC	ACGATCGTGT	900
	TGCTTCTCTT	TATGAAGGTC	AGGTTGCAAT	ATGGGATCTT	AGAAAATTG	AGAAGCCAGT	960
	TTTGACATG	ACTGAGCAAC	CAAAACCTTT	AACAAAAGTA	GCATGGTGTG	CCACTAGGAC	1020
55	TGGTCTACTT	GCCACTTTAA	CAAGGGATAG	TAATATTATT	AGATTGTATG	ATATGTCAGCA	1080
	TACAACCTCT	CCCATTTGGG	ATGAAACTGA	ACCCACAATA	ATTGAAAGTA	GTGTGCAACC	1140
	TTGTGACAA	TACATTGCTT	CCTTTGCCGT	GCATCCAAAC	AGTCAAAATC	GATGTATAGT	1200
	TGTAACTCCC	AACCGAACAA	TGTCAGACTT	CACCTGTTTT	GAAAGGATAT	CTCTTGCTGT	1260
60	GAGCCCAATT	ACATCTTTAA	TGTGGGCTTG	TGCTGCTCAT	TTATATGAAT	GTACGGGAAGA	1320
	AGAAATGAT	AATCTTTAG	AAAAAGATAT	AGCAACGAAG	ATGCGTCTTC	GGGCTTTATC	1380
	AAGGTATGGA	CTTGATACAG	AGCAGGTGTG	GAGGAACCAC	ATTTTAGCTG	GAAATGAAGA	1440
	TCCACAGCTC	AAGTCACCTC	GGTATACTCT	GCACCTTTAT	AAGCAATACA	CAGAAGATAT	1500
	GGATCAGAAA	TCTCCAGGCA	ACAAAGGATC	ATTGGTTTAT	GCAGGAATTA	AATCAATTGT	1560
65	AAAGTCATCG	TTGGGAATGG	TGGAAGAGCAG	CAGACATTA	TGGAGTGGGT	TGGATAAGCA	1620
	AAGTGATATT	CAAACTTAA	ATGAAGAGAG	AATCTTAGCT	TTACAGCTTT	GTGGGTGGAT	1680
	AAAGAAAGGA	ACGGATGTAG	ACGTGGGGCC	ATTTTGAAC	TCCTTGTATC	AAGAAGGGGA	1740
	ATGGGAAAGCA	GCTGCTGCTG	TGGCATTTGT	CAACTTGGAT	ATTGCGCCAG	CAATCCAAAT	1800
	CCTGAATGAA	GGGGCATCTT	CTGAAAAAGG	CAGGAGATCT	GAATCTCAAT	GTGGTAGCAA	1860
70	TGGCTTTATC	GGGTATATCG	GATGAGAAGA	ACTCCCTTTG	GAGAGAAATG	TGTAGCACAC	1920
	TGCGATTACA	GCTAAATTAAC	CCGTATTTGT	GTGTCAATGT	TGCATTTCTG	ACAAGTGAAA	1980
	CAGATCTTTA	CGATGGAGTT	TTGTATGAAA	ACAAAGTTGC	AGTACGTGAC	AGAGTGGCAT	2040
	TTGCTTTGTA	ATTCTTTAGT	GATACTCAGA	TACATCGAAA	AGTTGACCAA	TGAATGAAA	2100
	GAGGCTGGAA	ATTTCGAAGG	AATTTTGCTT	ACAGGCTTTA	CTAAAGATGG	AGTGACCTTA	2160
	ATGGAGAGTT	ATGTTGATAG	AACTGGAGAT	GTTCAAACAG	CAAGTTACTG	TATGTTACAG	2220
75	GGTTCACTTT	TAGATGTTCT	TAAAGATGAA	AGGGTTCACT	ACTGGATTGA	GAATTATAGA	2280
	AATTTATTAG	ATGCCCTGGAG	GTTTTGGCAT	AAACGAGCTG	AATTTGATAT	TCACAGGAGT	2340
	AAGTTGGATC	CCAGTTCCAA	GCTTTTAGCA	CAAGTTTGTG	TGAGTTGCAA	TTTCTGTGGC	2400
	AAGTCAATCT	TTCACAGCTG	TTCAGCTGTG	CCTCATCAGG	GCAGAGGTTT	TAGTCACTAT	2460
	GGTGTGAGTG	GCTCACCAAC	GAAATCTAAA	GTCAACAAGT	GTCTGTGGCT	TGCAAAAACA	2520
80	CTTCTCTGAT	GTGCGCTTTG	TCTCATTAAT	ATGGGAACAC	CAGTTTCTAG	CTGTCTCGGA	2580

5 GGAACCAAT CAGATGAAAA AGTGGACTTG AGCAAGGACA AAAAATTAGC CCAATTTAAC 2640  
 AACTGGTTTA CATGGTGTCA TAATTGCAGG CACGGTGGAC ATGCTGGACA TATGCTTAGT 2700  
 TGGTTCAGGG ACCATGCAGA GTGCCCTGTG TCTGCATGCA CGTGTAAATG TATGCAGTTG 2760  
 GATACACGG GGAATCTGGT ACCTGCAGAG ACTGTCCAGC CATAAAATGT TACCACCTTA 2820  
 AGAGAACCCT TCAAGTGTGG AGCTTCTTAG TAGGTGTCTT TCATAGCTCA GAAACATACC 2880  
 TCAGAACAAAG CCATTCATGA CTTACCTGTA ATGGGAAAAA AAATCATTTCT ATCAGAAAAA 2940  
 AAAAAAAAAA AAAAAAAAAA

10 SEQ ID NO:60 PQQ1 Protein sequence  
 Protein Accession #: NP\_061878

15 1 11 21 31 41 51  
 MSGTRKFDILW APHHVDRPVV CDELSLYHV ESTVNSELKA GSLRLSEDSA ATLLSINSDT 60  
 PYMKCVAWYL NYDPECLLAV QANGRVVLT SLGQDHSKF KDLIGKEFVP KHARQCNLA 120  
 WNPIDSNWLA AGLDKHRADF SVLIWDICSK YTPDIVPMER VKLSAGETET TLLVTKPLYE 180  
 LGQNDACLSL CMLPRDQKLL LAGMERNLAI FDLRNTSQKM FVNTKAVQGV TVDFYFHDIV 240  
 ASFYEGQVAI WDLRKFEPFV LFLTEQPKPL TKVAMCPTRT GLLATLTRDS NIIRLYDMQH 300  
 TPTPIGDETE PPIIERSVQP CINYLFASFV HPTSQMRMIV VTPNRTMSDF TVFERISLAW 360  
 SPITSLMMAC GRHLVECTEE EMDNSLEKDI ATKMLRLALS RYGLDTEQVW RNHILAGNED 420  
 PQLKSLWYTL HPMKQYTEDH DQKSPGNKGS LVYAGIKSTV KSSLGHVVESS RHNWGLDKQ 480  
 SDIQNLNEER ILALQLCGWI KKGTDVDVGP FLNSLVQEGE WERAAAVALF NLDIRRAIQI 540  
 LNEGASSEKRG RRESQCGSN GFITGLYG

25 SEQ ID NO:61 PDG3 DNA SEQUENCE

Nucleic Acid Accession #: U42359

Coding sequence: 563-775 (underlined sequences correspond to start and stop codons)

30 1 11 21 31 41 51  
 TTGTACATCT TAACAACCTT AAGCTGTACA AATAGANCAA TAATATCTAA ATGGTGTGAT 60  
 GATCAGCCCA CAGTACACAT CATTGATGAG AATTTCACTG GTCTCAACCT TTCTCATGCT 120  
 GAGTCTCGGC TTGTAAAAAT GACTTATAAA GGTCCAAGGA TTTAGAGATG ATTAAGAGAT 180  
 AAGCTGGCAT TCTGTAAAGG CACCATCGTC TATCCCGCTG CTTATCTAGA TAAAGAATGT 240  
 AGTGTCAAAAT CTTGTAAATA TATTGTACAA ATGGAAATTC AATCTTAAGG ATTATTTTTT 300  
 CCATATGTTT GTATTTCATT GTGGTGATTT GGAAGATGAT CTGGACTTTG AGTGAGAAGA 360  
 TGTGATTTGG ACCATGGCAC TTAAAACTC TATAACTCA GGCAAGCTCT TTAATCTTCT 420  
 CTGAGCCTCA GTTTTCTCA TTTTTCAAAT ATAGAGAGTA TAACATTAT CTCTAAGAC 480  
 AAGTTGTAGT AAATTACTGT TTTACAAATG TAAGATAACT TTTAATCTGT AGATTCCATA 540  
 TTCCAGTCTT ACATTATTAT GTTTATCTGC CACAGGGAGA AGTCTCTAGA TAAAAATGTC 600  
 TACCAAAAGA CTGACACGTG GAGTAAATCA TTTGACAGAT GCAATGCTT CCACCCCCAA 660  
 CAAATATACT TTCTTTAACT TCTGTGTGGG TATCACTTAG GGAATAAAG GCAGGCAACA 720  
 AAATATTTTT TAATTCATAT TTGAGAAAAA TTGTAGNCAA ATCTTTTNTT CCTATTACA 780  
 AATAATGTAA GCCTTAATAT TCAAGGGGTA ATAAAAATAC AAGTCTCTCC AAACAGGTAA 840  
 CTTACTTGAA AACTTT

SEQ ID NO:62 PDG3 Protein sequence

Protein Accession #: AAB18375

50 1 11 21 31 41 51  
 MGARGAPSRR ROAGRRLEYL PTGSFFFLLL LLLLCIQLGG GQKKKENLLA EKVEQLMEWS 60  
 SRRSIFRMNG DKPRFKIKAP FRNYSHIVMF TALQPORQCS VCRQANEVYQ ILANSWRYSS 120  
 APCRKLFPSS VDYDEGTDVF QQLAMISAPT FXKKPFKGRP KRADTFDLQR IGFAAEQLAK 180  
 WIADRTDVHI KVFREPNYSO TIALALLVSL VGGLLYXRRN NLEFTYNTKQ WAMVSLCIVP 240  
 AMTSGQMWNH IRGPPYARKN PHNGQVSYIH GSSQAQFVAB SHIILVLNAA ITMGMVLLNE 300  
 AATSKGDVGK RRIICLVGLG LVVFFPSFLL SIFRSKYHGY FYSDLDPE

60 SEQ ID NO:63 PDG8 DNA SEQUENCE

Nucleic Acid Accession #: AL080235

Coding sequence: 245-453 (underlined sequences correspond to start and stop codons)

65 1 11 21 31 41 51  
 GGTCCGCGCA CCGGCGCGCT CCGGCGCGCC GCGGCGCCCA GCGGCGCGCC GCGGCGCGCC 60  
 GGGGCGGCCA CCGGCGTGCC AGCCTACCCC GCGGCGGAGC CGGCGGCGCC GCTGTGGCTG 120  
 CAGGCGGAGC CGCTGCATTT CTGCTGCCTA GACTTCAGCC TGGAGGAGCT GCAGGCGGAG 180  
 CCGGCGTGCC GGCCTGAACG TAAGCCCAIT GAGTCCAGCC TGGTGGCCTG CTTCATGACC 240  
 CTGCTCATCTG TGGTGTGGAG CGTGGCGGCC CTCATCTGCC CGGTGCCCAT CATGCCCGGC 300  
 TTCTCTGCCA ACGGCATGGA ACAGCGCGCG ACCACCGCCA GCACCAACGC AGCCACCCCC 360  
 GCGGCACTGC CCGCAGGGAC CACCGAGGCC GCGGCGCGCC CCGGCGCTGC CGGCGCGGCC 420  
 GCGGCGGTCA CTTCTGGGGT GCGGACCAAG TGACCCGCTC CGCTCTCTCC TGTGTGCGTC 480  
 CTGTGTGCGC GCGGCGGGGT GCCTTTCCGC CCGGCGACTC GCGGCGGTGT CTTCGTGCTG 540  
 TAGTTATCGT TAGTTCTCTT TCCGAGATG GGGCGCCGGA GAGACCCAG CGCCTTTGAA 600  
 AAGCAAGGTT TGTGCTGCGC TTCCAGTTCC GAAAGCAGA TGTTTAAGCC CTGTGAGCTGA 660  
 GGGTGGGATC CAGGCTCGGA AGACGGAGAG GAGGGAATG GGGCCCTTTC CCCTCTATTG 720  
 CATCCCGCTG CCGGACTCTT TCCCGCACCC CACGTGCCCT AGATTTCATGG CAGAAAATGA 780  
 CCAATCTCTG TGTATTGTGT TTATATATTT AATAACTGTT TTAATGAAA GTTTTAGTAA 840  
 AAAAAATACA AAACAAAAAG ATTAAATGCG TATTCTGTGA GTAAGAGAAG CTCTTTGTAT 900  
 CTGAACATAG TTGTATTGGA AATTGTGTGT TTTTAAATTT ATTTAAATTT GGGGGGAGGG 960

CATGGGAAGG ATTTAACACC GATATATTGT TACCGCTGAA AATGAACTTT ATGAACCTTT 1020  
 TCCAAGTTGA TCTATCCAGT GACGTGGCCT GGTGGGCGTT TCTTCTTGTA CTTATGTGGT 1080  
 TTTTGGCTT TTAATACAGA CATTTTCCTC CAAAAAAGG AAAAAAAGG

5 SEQ ID NO:64 PDG8 Protein sequence  
 Protein Accession #: CAB45781

1 11 21 31 41 51  
 10 GRRTGRLRPA AAPSAATAA GAPALPAYP AAEPPGFLWL QSEPLHFCCL DFSLEELQGE 60  
 PGNRLNRKPI ESTLVACFMT LVIVVMSVAA LINFVPIIAG FLPMGMEQRH TTASTTAATP 120  
 AAVFAGITAA AAAAAAAAAA AAVTSGVATK

SEQ ID NO:65 PDM1 DNA SEQUENCE

15 Nucleic Acid Accession #: NM\_006765  
 Coding sequence: 149-1195 (underlined sequences correspond to start and stop codons)

20 1 11 21 31 41 51  
 CGGCGCGGCG CGGGTCCCT CGCAAGCCG CTGCCATCCC GGAGGGCCCA GCCAGCGGGC 60  
 TCCCGGAGCG TGGCCGGGCA GCGGTGGTGC GCGGTAGGAG CTGGGCGCGC ACGGCTACCG 120  
 CGGCTGGAGG AGACACTGCC CTGCCCGGAT GGGGGCCCGG GCGGCTCCTT CAGCGCGTAG 180  
 GCAAGCGGGG CGGCGGCTGC GGTACCTGCG CACCGGGAGC TTTCCCTTCC TTCTCTGTCT 240  
 25 GCTGCTGCTC TGCATCCAGC TCGGGGGAGG ACAGAGAGAA AAGGAGAATC TTTTAGCTGA 300  
 AAAAGTAGAG CAGCTGATGG AATGGAGTTC CAGACGCTCA ATCTTCCGAA TGAATGGTGA 360  
 TAAATTCGGA AAATTTATAA AGGCACCACC TCGAAACTAT TCGATGATGG TTATGTTTAC 420  
 TGCTCTTCAG CCTCAGCGGC AGTCTTCTGT GTGAGGCAAG GCTAATGAAG AATATCAAAT 480  
 ACTGGGCAAC TCCTGGGCGT ATTCACTGCG TTTTGTAAAC AAGCTCTTCT TCAGTATGGT 540  
 30 GGACTATGAT GAGGGGACAG ACGTTTTCAC GCAGCTCAAC ATGAACCTCG CTCTACATTT 600  
 CAYGCATTWW CCTCCAAAGG GCAGACCTAA GAGAGCTGAT ACTTTTGACC TCCAAAGAAT 660  
 TGGATTTCGA GCTGAGCAAC TAGCAAGTGG GATTGCTGAC AGAACGGATG TTCATATTCG 720  
 GGTTTTCAGA CCACCCAACT ACTCTGGTAC CATTGCTTTG GCCCTGTTAG TGTCGCTTGT 780  
 TGGAGGTTTG CTTTATTNGA GAAGGAACAA CTTGGAGTTC ATCTATAACA AGACTGGTTG 840  
 35 GGCCATGGTG TCTCTGTGTA TAGTCTTTGC TATGACTTCT GGCCAGATGT GGAACCATAT 900  
 CCGTGGACCT CCATATGCTC ATAAGAACCC ACACATGGA CAAGTGAGCT ACATTCAATG 960  
 GAGCAGCCAG GCTCAGTTTG TGGCAGAATC ACACATTATT CTGCTACTGA ATGCCGCTAT 1020  
 CACCATGGGG ATGGTTCTTC TAAATGAAGC AGCAACTTCG AAAGGCGATG TTGGAAGGAG 1080  
 ACGGATAATT TGCCTAGTGG GATTGGGCGT GGTGGTCTTC TTCTTCAGTT TTCTACTTTC 1140  
 40 AATATTCTGT TCCAAGTACC ACGGCTATCC TTATAGTAT CTGGACTTTG AGTGAGAAGA 1200  
 TGTGATTGGG ACCATGGCAC TTAARAACTC TATAACCTCA GCTTTTAAAT TAAATGAAGC 1260  
 CAAGTAAAT TTGCATAAAG TGAATGTTTA CCAATGAAGT AAACCTGTTC TGACTTTATA 1320  
 CTATTTTGAA TTCAATCAAT TCATTGTGAT CAGCTAGCTT ATTCTGTGTG ACTTTTATTA 1380  
 AACTGTGGGT TTTCTAGTA AATTAATTT ACAGAAATCA ATGGTAGCAT TTAGTAATCT 1440  
 45 ACAAGGAAA TATCAAGTG TTTTCAAGC CTGTTATATY CAGTGTGTC CACAGGATTG 1500  
 CARTAAATGA CAATGTAATT A

50 SEQ ID NO:66 PDM1 Protein sequence  
 Protein Accession #: NP\_006756

1 11 21 31 41 51  
 55 MGARGAPSR RQAGRLRLYL PTGSPFFLL LLLLCIQLGG GQKKKENLLA EKVEQLMEWS 60  
 SRRSIFRNG DKFRKFIKAP PRNYSIMVMP TALQPORQCS VCRQANEEVO ILANSWRYSS 120  
 APCNLKPSM VDYDEGTDVF QQLAMNSAPT FXHKPPKGRP KRADTFDLOR IGPAABQLAK 180  
 WIADRTDVHI RVFRPPNYSC TIALALLVSL VGGLLYXRRN NLEFIYNKTO WAMVSLCIVF 240  
 AMTSGQMNH IRGPPYAHKH PRNGQVSYIH GSSQAQFVAE SHIILVLANA ITGMVLLINE 300  
 AATSKGDVGI RRIICLVGLG LVVFFPSFL SIFRSKYHGY PYSLDLFE

SEQ ID NO:67 PDM2 DNA SEQUENCE

65 Nucleic Acid Accession #: NM\_000947  
 Coding sequence: 88-1817 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
 70 GGTTCATAT GAATCTCTCC GCCACCGGG AACAGCTGGC TGCCACCGTT TGTGTTTTCC 60  
 GAGTTTGTAT TCTTGCAAGT GACCAAGATG GAGTTTCTG GAAGAAAGCG GAGGAAGCTG 120  
 AGGTGGGAG GTGACCAAG GAATGCTTCC TACCTCATTT GCCTTCAGTT TTACTTGAG 180  
 CCACCTCTCG AAAACATATC TTTAACAGAA TTTGAAACT TGGCTATTGA TAGAGTTAAA 240  
 75 TTGTTAAAT CAGTTGAAAA TCTTGAAGTG AGCTATGTGA AAGGAAGTGA ACAATACCAG 300  
 AGTAAGTTGG AGAGTGAAGT TCGGAAGCTC AAGTTTTCTT ACAGAGAGAA GCTAGAAGAT 360  
 GAATATGAAC CACGAAGAAG AGATCATATT TCTCATTTTA TTTTGGCGGT TGCTTATTGC 420  
 CAGTCTGAAG AACTTAGACG CTGGTTCAAT CAACAAGAAA TGGATCTCCT TCGATTTAGA 480  
 TTTAGTATTT TACCCAAGGA TAAATTCAG GATTCTCTAA AGGATAGCCA ATTGCAGTTT 540  
 GAGGCTATAA GTGATGAAGA GAAGACTCTT CGAGAACAGG AGATTGTTCG CTCAATCACC 600  
 AGTTTAAGTG GACTTAAGTT GGGGTTCGAG TCCATTATA AGATCCCTTT TGCTGATGCT 660  
 80 CTGGATTGTG TTCGAGGAAG GAAAGTCTAT TTGGAAGATG GCTTTGCTTA CGTACCACCT 720

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AAGGACATYTG TGGCAATCAT CCTGAATGAA TTTAGAGCCA AACTGTCCAA GGCTTTGGCA 780
TTAACAGCCA GGTCTTGGCC TGCTGTGCAG TCTGATGAAA GACTTCAGCC TCTGCTCAAT 840
CACCTCAGTC ATTCCTACAC TGGCCAAGAT TACAGTACCC AGGGAATGT TGGGAAGATT 900
TCTTTAGATC AGATTGATTT GCTTTCTACC AAATCCTTCC CACCTTGCAAT GCGTCAGTTA 960
CATAAAGCTG TCGGGGAAAA TCACCATCTT CGTCATGGAG GCGGAATGCA GTATGGCCTA 1020
TTTCTGAAGG GCATTGGTTT AACTTTGGAA CAGGCATTGC AGTTCTGGAA GCAAGAATTT 1080
ATCAAAGGAA AGATGGATCC AGACAAGTTT GATAAAGGTT ACTCTTACAA CATCCGTCCAC 1140
AGCTTTGGAA AGGAAGGCAA GAGGACAGAC TATACACCTT TCAGTTCGCT GAAGATTATT 1200
CTGTCCAAAT CACCAAGCCA AGGGGATTAT CATGGGTGCC CATTCCTGCA CAGTGAATCA 1260
GAGCTGCTGA AGCAAAAGTT GCAGTCATAC AAGATCTCTC CTGGAGGGAT AAGCCAGATT 1320
TTGGATTAGT TAAAGGGGAC ACATTACCAG GTAGCCTGTC AAAAATACTT TGAGATGATA 1380
CACAAATGTG ATGATTGTGG CTTTCTTTTG AATCATCTTA ATCAGTTCTT TTGTGAGAGC 1440
CAACGTATTC TAAATGGTGG TAAAGACATA AAGAAGGAAC CTATCCAACC AGAACTCCTT 1500
CAACCCAAAC CAAGTGTTCA GAAAACCAAG GATGCATCAT CTGCTCTGGC CTCTTTAAAT 1560
TCCTCTCTGG AAATGGATAT GGAAGGACTA GAAGATTACT TTAGTGAAGA TTCTTAGGCA 1620
GTTTATTAAC CCTTTTCTCT CAATAGCCTG TTCTCTGTTT TTAAGATTIT GCCTTTGTTG 1680
TTGAAAAGG GTTTCACCTG CACCAAGGCT TAGTGCAGTG ACACAATTAC AGCTGATTGC 1740
AGCCTTGACG TTCCCACTCT AAGTGATCCT CCTACCTCAG CTTCCCAAGT AGTTAGGACA 1800
CACAGGTGTG CACCTCATAT CCAGATAATT TTTTTCAAAT TTTTITGTA GAGGTGGGCG 1860
GTCTCCCTAT GTTCCCCAGG CAGATCTCAG ACTCCTGGGC TCAAGCGATC CTCACACCTC 1920
AGCGTCCGAC AGTGTCCGGA TTACAGTTGT GAGCCACTGT GCCTGGCCTT TTTTITTTTT 1980
TAACCTTTTC GTTTAACTTC TCTCTTCACT GCATCCCAAT CCATCTACAG GCATGCACAC 2040
TTATTAGGAA AGGAGGTTTG AGGTAAACAC AGAGACTTTC ACTATATTTT GCTTTGACAG 2100
AAGGAAAGG GAGGAGTTTC TATTAAATC TGTCACTTGA GTGATGTGAT TTAAGTCTTA 2160
TTTTAGGAGA TAAAAACAGC TTTGGGACT GTTTAAAGTC CCCCAGAAC TACAATTAAG 2220
AACAACTTTT GTTTTAACTC TTAATCACTT TGTAAATTTG ACTCAATCCT TTCTGGGACC 2280
ATTTTGTGTA ATAAATATCA AAGTGT

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30 SEQ ID NO:68 PDM2 Protein sequence:  
Protein Accession #: NP\_000938

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1 11 21 31 41 51
MEFSGRKRRK LRLAGDQRNA SYPHCLQFYL OPPSENISLT EFENLAIDRV KLLKSVENLG 60
VSVVKGTEQY QSKLESBLRK LKPSYREKLE DEYEPRRRDH ISEFILRLAY CQSEELRWF 120
IQQEMDLRF RFSILPKDKI QDFLKDSQLQ FZAISEDEKT LREQETVASS PSLSGLKLF 180
ESIYKTFPAD ALDLFRGRKV YLEDGFAYVP LKDIVAILIN EFRARLSKAL ALTARSLPAV 240
QSDELRQLLL NELSHTSTGG DYSTQGNVCK ISLDQIDLLS TKSFPFCMRQ LEKALRENNH 300
LRHGRMGYQ LFLKIGLTL EQALQFWKQE FIKGRMDPDR FDKGYSYNIR HSPFKEGKRT 360
DYTFPSCLEKI ILSNFPSSQGD YHGCPRHSD FELLKQKLQS YKISPGGISQ ILDLVKGTHY 420
QVACQKYFEM IHNVDGCFPS LNHFNQFFCE SQRLINGGKD IKKEPIQPET PQPKPSVQRT 480
KDASSALSL NSSLEMDMEG LEDYPSZDS

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45 SEQ ID NO:69 PDM3 DNA SEQUENCE  
Nucleic Acid Accession #: NM\_024840  
Coding sequence: 108-491 (underlined sequences correspond to start and stop codons)

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1 11 21 31 41 51
AATTCATACA GGAGAGAAGT CATATATATG CAGTGATTGT GGAAAAGGCT TCATCAAGAA 60
GTCTCGGCTC ATTAATCATC AGAGAGTTCA TACAGGAGAG AAACCCATG GATGCAGCCT 120
GTGTGGGAGG GCCTTCTCCA AAAGGTCCAG GCTCACTGAA CACCAGAGAA CTCATACAGG 180
AGAGAAGCCC TATGAATGCA CTGAATGTGA CAAAGCATTC CGCTGGAAAT CACAGCTCAA 240
TGCAATCAG AAAGCTCACA CAGGAGAGAA GTCATATATA TGCCGTGATT GTGGAAAAGG 300
CTTCAITCAG AAGGGAATC TCATTGTACA TCAGCGAATT CATACTGGAG AAAAACCTTA 360
TATATGCAAT GAATGTGGAA AAGGCTTCAT CCAAAAGGCG AACTCTCTTA TTCAATGAGC 420
TACTCAGACT GGAGAGAAAC CCTATGAATG CAATGAATGT GGGAAAAGCT TCAGCCAGAA 480
GACATGTTTA ATATGCCATC AGAGATTICA CACAGGAAG ACACCTCTTG TATGTACTGA 540
GTGTGGAAAA TCCTGCTCAC ACAAGTCAGG TCTCATTAAC CACCAGAGAA TTCACACAGG 600
AGAGAAACCC TATACATGCA GTGACTGTGG GAAAGCTTTC AGAGATAAAT CATGTCTCAA 660
CAGACATCGG AGAACTCATA CAGGGGAGAG ACCGTATGGA TGCTCTGATT GTGGGAAAGC 720
TTTCTCCAC TGTCTATGCC TTGTTTATCA TAAGGGAATG CTGCATGCAA GAGAGAAATG 780
TGATAGTTCA GTCAAAATGG AAAATCCTTG CTCAGAGAGT CATAGCTTAT CACATACAGC 840
TGATCTCATA CAGGATAAAG ACTCTGTTAA CATGGTGACT CTGCAGATGC CTTCGTGTGC 900
AGCTCAGACC TCATTAACTA ACAGTGGCTT CCAAGCAGAG AGCAAAAGTAG CCATGTGTAG 960
CCAGCCTGTT GCCAGAAGTT CAGTCTCAGC AGATAGTAGA ATTTGCACAG AATAAAACC 1020
ATATGAATGC AGTGAATGTG GTAGTGCTTT CAGTGAATCA TTACATCATA TGTACAAAA 1080
AACACAGAGG AACAACTGA TATATTCAAG GTGGAAAGCC CTTGAATAAA ACCTTATGCG 1140
TAATAAGCAT ATACTCAGAG AAAAATAGTA TGAAGTGAG ACTGGGAAT TCTTTTATGG 1200
GAAGATAGAT CTCTCATCA GTGACCATAG ATCAGATCTT CAGTGAAGCT ATAGTTGGTA 1260
GAAATATAT GATCAATGGA AAGTCTTGT TCAGAAACAG TACGCCAGTA GGTATCAGG 1320
GGTTTACACA GGAGAGAAAC TTTTGAAGA CCTTTGAAG CTATGAATGT GGCAGGGTTG 1380
CTAGTGTGAC ATTCCTGCTT ATCCTCAGAG GGAATCATAT AGAAATAAAA CTATGAAAT 1440
GTAACTAGAA CATCTTCATC AAAATATGAA AGAACACAGC AAGCAATAA GCCCTGTGAA 1500
AAGGAGTATT TTAGAGATT CGATCAGAAA TCTAACATCA TTATATGGCA GATAATATAC 1560
AGGATGTGTA TTTTAGGACA ATATACCTTG AATCACTAGT TGATATGTCA ATGACTAATT 1620
AAAAGGGGTT GTACAGTTTA CACATCACTG GTTAAATTTA TAGCACAATG TACCTCTTCC 1680
CCCTTTTGTG ATAAGAGTCT TCTATTCCTA ACCAAGATCA TTATATGATT AGCTCTTGTG 1740
TTTCTTTGAT TCCAATTTTC TTCACCTGTT ATTTTCAGACT ACTGAAGCTC TTCAAAAGGA 1800

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AAAAATGATT TAATTAAATA ATGTAACACA ACAAGTTGG ATGTGTTTAA CTTTATAAAT 1860  
AATCACCCCA GAGGAATGAA GTTCAAACT TGTGAATAAC C

5 SEQ ID NO:70 PDM3 Protein sequence:  
Protein Accession #: NP\_079116

1 11 21 31 41 51  
10 MDAACVGRPS PKGPGSLNTR ELIQERSPMN ALNVTKHSAG NHSSMHIRKL TQERSHIYAV 60  
IVEKASFRRE ISLYISEPIL EKNPIYAMNV EKASSKRATS LFDVLTILER NPMNAMNVGK 120  
ASARRHV

15 Nucleic Acid Accession #: NM\_018455  
Coding sequence: 341-955 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
20 AATTTCGGCA CGGGGGGGAG GCACAGTGAG TCCACTGGGG CACGGCAGCG TCTAAGCCAC 60  
AAGCCGACTG ACATAAGCCA GGTCTTAACG GAGCCTATGT GTAAGTCCAC TACTGGTGCA 120  
AGGTTCGACA CTCTTAAGAA GAGCGGCGTG GGGGGCTCGG CGAAGCTTCG TCAAGTCGCT 180  
CCCCCGTCA GTCCCTGTG CCCAAGACAC AGCCTGATGC TTGTGCTCCG GTGGCGCGAC 240  
TTGGAGCGCG CGGGAAGTGC AATTGGTGGC TTTGAAGGCG GCGAGCGCGG AACAGCTCTT 300  
25 GAGGAGTGAG ACTGCAGGAG ATGTGGGCGG TGCCAAAGAG ATGGATGAGA CTGTTGCTGA 360  
GTTTCATCAAG AGGACCATCT TGAATAATCCC CATGAATGAA CTGACAACAA TCCTGAAGGC 420  
CTGGGATTTT TTGCTGAAA ATCAACTGCA GACTGTAAAT TTCCGACAGA GAAAGGAATC 480  
TGTAGTTCAG CACTTGATCC ATCTGTGTGA GGAAGAGCST GCAAGTATCA GTGATGCTGC 540  
CCTGTAGAC ATCATTTATA TGCATTTCAT TCAGCACCAG AAAGTTTGGG ATGTTTTTCA 600  
30 GATGAGTAAA GGACCAAGTG AAGATGTTGA CCTTTTGTAT ATGAACAAT TTAATAATTC 660  
GTTCAAGAAA ATTCTTCAGA GAGCATTAAA AAATGTGACA GTGAGCTTCA GAGAAATGTA 720  
GGAGATGCA GTCTGGATTC GAATTCCTG GGAACACAG TACACAAAGC CAAACAGTA 780  
CAAACTACC TACGTGTGT ACTACTCCCA GACTCCGTAC GCCTTCACGT CCTCTCCAT 840  
CCTGAGGCGC AATACACCGC TTCTGGGTCA GGAGTTAGAA GCTACTGGGA AAATCTACCT 900  
35 CCGACAGAG GAGATCATTT TAGATATTAC CGAAATGAAG AAAGCTTGCA ATTAGTGAA 960  
ATGAAGGAA AATAAAATTT CCTCACAGT CAAAAAAAAA AAAAA

SEQ ID NO:72 PDM8 Protein sequence:  
Protein Accession #: NP\_060925

1 11 21 31 41 51  
40 MDETVAEFIK RTILKIPNE LTILKAWDF LSENQLQTVN FRQRKBSVVQ HLHLCEEER 60  
ASISDAALLD ILYMQFBHQ KVVDFQMSK GPGEDVDLFD HKQFNSPKK ILQALKNVT 120  
45 VSPRETEENA VMRIAWGTQ YTKPNQYKPT YVYVYSQTFY APTSSMLRR NTPILGQELE 180  
ATGKIYLRQE EIIIDITEEK KACN

50 Nucleic Acid Accession #: NM\_016192  
Coding sequence: 1-1125 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
55 ATGGTGCTGT GGGAGTCCOC GCGGCAGTGC AGCAGCTGGA CACTTTGCGA GGGCTTTTGC 60  
TGGCTGCTGC TGCTGCCCGT CATGCTACTC ATCGTAGCCC GCCCGGTGAA GCTCGCTGCT 120  
TTCCCTACCT CCTTAAGTGA CTGCCAAAGC CCCACCGGCT GGAATTGTCT TGGTERTGAT 180  
GACAGAGAAA ATGATCTCTT CCTCTGTGAC ACCAACACCT GTAAATTTGA TGGGGAATGT 240  
TTAAGAATTG GAGACACTGT GACTTGCCTC TGTCAGTTCA AGTGCAACAA TGACTATGTG 300  
60 CCTGTGTGTG GCTCCAATGG GGAGAGCTAC CAGAATGAGT GTTACCTGCG ACAGGCTGCA 360  
TGCAAAACAGC AGAGTGAGAT ACTTGTGGTG TCAGAAGGAT CATGTGCCAC AGATGCAGGA 420  
TCAGGATCTG GAGATGGAGT CCATGAAGGC TCTGGAGAAA CTAGTCAAAA GGAGACATCC 480  
ACCTGTGATA TTGCCAGATT TGGTGCAGAA TGTGACAGAG ATGCCGAGGA TGTCTGGTGT 540  
GTGTGTAATA TTGACTGTTT TCAAAACCAAC TTCAATCCCC TCTCGGCTTC TGATGGGAAA 600  
TCTTATGATA ATGCATGCCA AATCAAGAA GCATCGTGTG AGAAACAGGA GAAATTTGAA 660  
65 GTCATGTCTT TGGGTGATG TCAAGATAAC ACAACTACAA CTACTAAGTC TGAAGATGGG 720  
CATATGCAA GAACAGATTA TGCAGAGAAT GCTAACAAAT TAGAAGAAAG TGCCAGAGAA 780  
CACCACATAC CTGTGCCGGA ACATTACAAT GGCTTCTGCA TGCAATGGGA GTGTGAGCAT 840  
TCTATCAATA TGCAGGAGCC ATCTTGCAGG TGTGATGCTG GTTATACTGT ACAACACTGT 900  
70 GAAAAAAGG ACTACAGTGT TCTATACGTT GTTCCCGTCT CTGTACGATT TCAATATGTC 960  
TTAATCGCAG CTGTGATTGG AACAATTGAG ATTGCTGTCA TCTGTGTGGT GGTCTCTGTC 1020  
ATCACAGGA AATGCCCCAG AAGCAACAGA ATTCACAGAC AGAAGCAAAA TACAGGGCAC 1080  
TACAGTTCAG ACAATACAAC AAGAGCGTCC ACGAGGTAA TCTGA

SEQ ID NO:74 PDM9 Protein sequence:  
Protein Accession #: NP\_057276

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5      1      11      21      31      41      51
      1 MVLWESPRQC SSWTLCEGFC WLLLLPVMLL IVARPVKLAA FPTSLSDCQT PTGWNCSGYD 60
      61 DRENDLFLCD TNTCKFDGEC LRIGDTVTCV CQFKCNNDYV PVGCSNGESY QNECYLRQAA 120
     121 CKQQSEILVV SEGSCATDAG SGSQDGVHEG SGETSQRETS TCDICQFGAE CDEDAEDVMC 180
     181 VCNIDCSQYN FNPLCASDGK SYDNACQIKE ASCQKQEKIE VMSLGRQDN TTTTTSKSDG 240
     241 HYARTDYAEN ANKLEESARE HHIPCPHYN GFCMHGKCEH SINMQEPSCR CDAGYTGQHC 300
     301 EKKDYSVLVY VPGFVRPQYV LIAAVIGTIQ IAVICVVVLC ITRKCPRSNR IHRQKQHTGH 360
     361 YSSDNTTRAS TRLI
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## SEQ ID NO:75 PDM1 DNA SEQUENCE

15 Nucleic Acid Accession #: NM\_014324  
Coding sequence: 89-1237 (underlined sequences correspond to start and stop codons)

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20      1      11      21      31      41      51
      1 GGGCCGGGGA TTGGGAGGCG TTCTTGCGAGG CTGCTGGGCT GGGGCTAAGG GCTGCTCAGT 60
      61 TTCTTTTACG GGGGCACTGG GAAGCGCCAT GGCACCTGCG GGCATCTCGG TCGTGAGAGT 120
     121 GTCCGGGCTG GCCCGGGGCC GTTTCGTGTC TATGGTCTCG GCTGACTTCG GGGCGGCTGT 180
     181 GGTACGCGTG GACCGGCGCG GCTCCCGCTA CGACGTGAGC CGCTTGGGCC GGGGCAAGCG 240
     241 CTGCGTAGTG CTGACCTGGA AGCAGCGCGG GGAGCCGCGT GCTGCGGCGT CTGTGCAAGC 300
     301 GGTGCGATGT GCTGCTGGAG CCTTCCGCC GCGGTGTCAT GGAGAAACTC CAGCTGGGCC 360
     361 CAGAGATTCT GCAGCGGGAA AATCCAAGGC TTAATTTATG CAGGCTGAGT GGATTGGGCC 420
     421 AGTTGAGGAA AGCTTCTGCC GGTAGCTGG CCACGATATC AACTATTGGG CTTTGTCTAG 480
     481 TGTTCCTCA AAAATTGGCA GAAGTGGTGA GAATCCGTAT GCCCGCTGGA ATCTCGTGGC 540
     541 TGACTTTGCT GGTGGTGGCC TTAATGTGTC ACTGGGCAAT ATAATGGCTC TTTTGTACCG 600
     601 CACACGCACT GACAAGGCTC AGGTCAATTG TGCAAAATAT GTGGAAGGAA CAGCATATTT 660
     661 AAGTTCTTTT CTGTGGGAAA CTCAGAAATC GAGTCTGTGG GAAGCACCTC GAGGACAGAA 720
     721 CATGTTGGAT GGTGGAGCAC CTTCTATATC GACTTACAGG ACAGCAGATG GGGAAATCAT 780
     781 GGCTGTTGGA GCAATAGAAC CCCAGTTCTA CGAGCTGCTG ATCAAAGGAC TTGGACTAAA 840
     841 GTCTGATGAA CTTCCTCAAT AGATGAGCAC GGATGATTGG CCAGAAATGA AGAAGAAGTT 900
     901 TGCAGATGAT TTGCAAGAAG AGACGAAGGC AGAGTGGTGT CAAATCTTTG ACGGCACAGA 960
     961 TGCCCTGTGT ACTCCGCTTC TGACTTTTGA GGAGGTTGTT CATCATGATC ACAACAAGGA 1020
     1021 ACGGGGCTCG TTATCAACCA GTGAGGAGCA GGACGTGAGC CCCCGCCTTG CACCTCTGCT 1080
     1081 GTTAAACACC CCAGCCATTC CTCTTCCCAA AGGGGATCCT TTCTAGGAGG AACACACTGA 1140
     1141 GGAGATACCT GAAGAAATTTG GATTACGCCG AGAAGAGATT TATCAGCTTA ACTCAGATAA 1200
     1201 AATCATTGAA AGTAATAAGG TAAAGCTAG TCTCTAATTT CCAGGCCCCC GGCTCAAGTG 1260
     1261 AATTTGAATA CTGCATTTAC AGTGTAGAGT AACACATAAC ATTGTATGCA TGGAAACATG 1320
     1321 GAGGAACAGT ATTACAGTGT CCTACCACTC TAATCAAGAA AAGAATTACA GACTCTGATT 1380
     1381 CTACAGTGAT GATTGAATTC TAAAAATGGT TATCATTAGG GCTTTTGATT TATAAAACTT 1440
     1441 TGGGTACTTA TGTAAATTTA TGGTAGTTAT TCTGCCCTTC AGTTTGCTTG ATATATTTGT 1500
     1501 TGATATTAAAG ATTCTTGACT TATATTTTGA ATGGGTCTTA GTGAAAAGG AATGATATAT 1560
     1561 TCTTGAAGAC ATCGATATAC ATTATTTTAC ACTCTTGATT CTACAATGTA GAAAATGAGG 1620
     1621 AAATGCCACA AATTGTATGG TGATAAAAGT CACGTGAACG AGAGTGAATT GTTGCAATCA 1680
     1681 GGCCCTTTGT CTGGGTGTTT ATGATCTCCC TCTAAGCACA TTCCAAACTT TAGCAACAGT 1740
     1741 TATCACACTT TGTAAATTTG AAGAAAAAGT TTCACTGTGA TTGAATCAGA ATGCCCTTCA 1800
     1801 CTGAAAAAAA CATATCCAAA ATAATGAGGA AATGTGTGTT CTCACTACGT AGAGTCCAGA 1860
     1861 GGGACAGTCA GTTTTAGGGT TGCCCTGTAT CAGTAACTCG GGGCCTGTTT CCCCGTGGGT 1920
     1921 CTCTGGGCTG TCAGCTTTCC TTCTCCATG TGTTTGATTT CTCCTCAGGC TGGTAGCAAG 1980
     1981 TTTGGATCT TATACCCAC ACACAGCAAC ATCCAGAAAT AAAGATCTCA GGACCCCCCA 2040
     2041 AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA
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SEQ ID NO:76 PDM1 Protein sequence:  
Protein Accession #: NP\_055139

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60      1      11      21      31      41      51
      1 MALQGISVVE LSLAPGRXC AMVLADPGAR VVRVDRPGSR YDVSRLGRGX RSLVLDLKQP 60
      61 REPRAAASVQ AVGCAAGALP PRCHGETPAG PRDAAAGKSK AYLCQAEWIV FVQESPCRLA 120
     121 GHDINYLALS GVLSKIGRSG ENFYAPLNLV ADPAGGGLMC ALGIIMALFD RRTDRKQVI 180
     181 DANMVESTAY LSSFLWKTQK SSLWEAPRGQ NMLDGGAPFY TTYRTADGEF MAVGAIEPQF 240
     241 YELLIKGLGL KSEDLFNQMS TDDWPEMKKK FADVPAKTKK AEWQIFDGT DACVTPVLTF 300
     301 EEVVDHDKNK ERGSFITSEE QDVSPRLAPL LIATPAIPSS KGDFFIGEHT EEILEEFGFS 360
     361 REEIVQLNSD KIIESNKVRA SL
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## SEQ ID NO:77 PDM3 DNA SEQUENCE

70 Nucleic Acid Accession #: AB028951  
Coding sequence: 97-1128 (underlined sequences correspond to start and stop codons)

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75      1      11      21      31      41      51
      1 GTTAAATCCT TACTTTACCA GATTCTTGAT GGTATCCATT ACCTCCATGC AAATTGGGTG 60
      61 CTTACACAGG ACTTGAAACG AGCAAAATAT CTAGTAATGG GAGAAGGTCC TGAGAGGGGG 120
     121 AGAGTCAAAA TAGCTGACAT GGGTTTGGCC AGATTAATCA ATTCTCCTCT AAAGCCACTA 180
     181 GCAGATTTGG ATCCAGTAGT TGTGACATTT TGGTATCGGG CTCCAGAACT TTTGCTTGGT 240
     241 GCAAGGCATT ATACAAGGCC CATTGATATA TGGGCAATAG GTTGTATATT TGCTGAATTG 300
     301 TTGACTTGGG AACCTATTTT TCACTGTCTG CAGGAAGATA TAAAAACAAG CAATCCCTTT 360
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	CATCATGATC	AACTGGATCG	GATATTTAGT	GTCTGGGGT	TTCTGCGAGA	TAAAGACTGG	420
	GAAGATATTA	GAAAGATGCC	AGAATATCCC	ACACTTCRAA	AAGACTTTAG	AAGAACAACG	480
	TATGCCAAC	GTAGCCTCAT	AAAGTACATG	GAGAAACACA	AGGTCAAGCC	TGACAGCAAA	540
5	GTGTTCTCT	TGCTTCAGAA	ACTCCTGACC	ATGGATCCAA	CCAAGAGAA	TACCTCGAG	600
	CAAGCTCTGC	AGGATCCCTA	TTTTCAGGAG	GACCCCTTGC	CAACATTAGA	TGTATTGGCC	660
	GGCTGCCAGA	TTCCATACCC	CAAACGAGAA	TTCTTTAATG	AAGATGATCC	TGAAGAAAA	720
	GGTGACAAGA	ATCAGCAACA	GCAGCAGAAC	CAGCATCAGC	AGCCCAACAG	CCCTCCACAG	780
	CAGGCAGCAG	CCCTTCACCA	GGGCCCCCA	CCACAGCAGA	ACAGCACCCA	GACCAACGGG	840
10	ACGCGAGTGT	GGGCTGGGGC	CGGGGTGGGG	GGCACCGGAG	CAGGGTTGCA	GCACAGCCAG	900
	GACTCCAGCC	TGAACAGAGT	GCCTCCAAAC	AAGAAGCCAC	GGCTAGGGCC	TTCAGGCGCA	960
	AATCAGGTC	GACCTGTGAT	GCCTCCGAGT	TATCAGCACT	CCAGTTCTCG	CCTGAATTAC	1020
	CAAGCAGCG	TTCAGGGATC	CTCTCAGTCC	CAGAGCACAC	TTGGCTACTC	TTCTCTGCTC	1080
	CAGCAGAGCT	CACAGTACCA	CCCATCTCAC	CAGGCCACCC	GGTACTGACC	AGCTCCCGTT	1140
	GGGCCAGGCC	AGCCACGCC	AGAGCACAGG	CTCCAGCAAT	ATGTCTGCAT	TGAAAAGAAC	1200
15	CAAAAAATG	CAAACTATGA	TGCCATTAA	AACCTATACA	CATGGGAGGA	AAACCTTATA	1260
	TACTGAGCAT	TGTGACGAGC	TGATAGCTCT	TCTTTATTGA	CTTAAAGAG	ATTCTTTGTA	1320
	AGTTTCCCCA	GCACCCCTTC	CCTGCATGTG	TTCCATTGTG	ACTTCTCTGA	TAAAGCGTCT	1380
	GATCTATCC	CAGCACTTCT	GTAACCTTCA	GCATTTCTTT	GAAGGATTTC	CTGGTGACCC	1440
20	TTTCTCATCG	TGTAGCAATC	ACTATGGTTC	ATCTTTTCAA	AGCTCTTTTA	ATAGGATTTT	1500
	AATGTTTTAG	AAACAGGATT	CCAGTGGTGT	ATAGTTTTAT	ACTTCATGAA	CTGATTTAGC	1560
	AACACAGGTA	AAAAATGACC	TTTTAAAGCA	CTACGTTTTT	ACAGACAATA	ACTGTTCTGC	1620
	TCATGGAAGT	CTTAAACAGA	AACGTGTACT	TGCCAAAGT	ACTTTACTAT	TACGTTCTGA	1680
	TTTATCTAGT	TTCAGGGAG	GTCTAATAAA	AAGACAAGCG	GTGGGACAGA	GGGAACCTAC	1740
25	AAOAAAAAC	TGCCATAGAT	TTTGCAGTTA	TGTGCTTTAT	GCCACGAAGA	ACTGAAGTAT	1800
	GTGGTAATTT	TATAGAAATC	ATTATATATG	AACGTAGTTC	CCAGCATCAT	CTTATTTCTGA	1860
	ATAGCATTCA	GTAATTAAGA	ATTACAATTT	TAACTTCTAT	GTAGCTAAGT	CTACCTTAAA	1920
	AAGGTTTTCA	AGGCTTTTGT	ACAGTCTCGA	TGGCCACAC	CAAAACGCTG	AAGAGAGTAA	1980
	CACTGCACT	AGGATTTCTG	TAAAGAGTAA	TTTTGATCAA	AAGACGTGTT	ACTTCCCTTT	2040
30	GAAGGAAGA	TTTTTATGTT	GTATTGTACA	TAAAGTCCGC	TTCTCTAAGA	AACCATTTGT	2100
	TTCTTCACAT	CTGGGTCTGC	GTGAGTAATC	TTCTTGCAAT	ATCAAGGTTA	CTCAAGTAGA	2160
	AGCCTGAAAA	TGAATCTGCT	TTTTAAATAA	AGAGCAGTGT	TCTCCATTGG	TATTTGTATT	2220
	AGATATAGAG	TGACTATTTT	TAAAGCATGT	TAAAAATTTA	GGTTTTATTCT	ATGTTTAAAG	2280
	TATGTATTAT	GTATGCTATA	TTTTGCTGTT	GTACTGTAAA	CTTAATTTCTA	TCAAGAATCT	2340
35	TTTTCATTTG	ACTGAATGAT	TTCTTTTGCC	CCTAGGAGAA	AACTTAATAA	TTGTGCTTAA	2400
	AACTATGGG	CGGATAGTAT	AAGACTATAC	TAGACAAGAT	GAATATTGTC	ATTTCCATTA	2460
	TCTATGAATT	AGTGGCTGAG	TTCTTTCTTA	GCTGCTTTAA	GGAGCCCTTC	ACTCCCCAGA	2520
	GTCAAAAGGA	AATGTAAAAA	CTTAGAGCTC	CCATTGTAA	GTAGGGGCA	AGAAATTTGT	2580
	GTCTTCTGTA	ATGCTACTAG	CAGCACCAGC	CTTGTTTTAA	ATGTTTTCTT	GAGCTAGAA	2640
40	AAATAGCTGA	TTATTTGATA	TGCAAAATTA	ATGCAATTTT	AAAAACTATT	CTTTCTGAAC	2700
	TTATCTACTC	GGTATATATA	CTGTGGGTCC	ATACACAAGT	AAATAAGAT	TAGACAGAAG	2760
	CCAGTATACA	TTTTGCACTA	TTGATGTGAT	ACTGTAGCCA	GCCAGGACCT	TACTGATCTC	2820
	AGCATATATA	TGCTCACTAA	TAATGAAGTC	TGCATAGTGA	CACCTATCAA	GACTGAAGAT	2880
	GAAGCAGGTT	AGCTGCTCCA	TTGGAAGGAG	TTTCTGATAG	TCTCTGCTGT	TTTTTACCCCT	2940
45	TCCATTTTTT	AAAATAAGAA	ATTAGCAGCC	CTCTGCATAA	TGTAGCTGCC	TATATGCAAT	3000
	TTTTATCTGT	GGCCTTAAGC	CTCAGTGTCC	AGAGCTGTGG	GTCTATCAGT	GCTTATTTGA	3060
	CCCTCACCAT	GTGCTCTGGT	CCCTGCTGGG	TAGAGAACAC	AGAGGACAGG	GCATCTTCTC	3120
	TGTCTTTAAG	GAGCTTTGTA	TCTGTGACAG	TAAAGCCCTC	TGGGATGTCT	GTGCCATGTG	3180
	ATTGACTTAC	AAGTGAAGCT	GTCTTATAAT	ATGAAGGTCT	TTTTGTTTAC	TTCTTAAACCC	3240
50	ACTTTGGGTA	TACTATATCC	CAAAATCTGT	CTGTAAATAA	TATTATGGAA	GGGTTTCTAT	3300
	GTCACTTAC	CTTAGAGAAA	GCCAGTGATT	CAATATACAA	AAAGGCATTG	ACGTATCTTT	3360
	GAATAGCTGA	CAGCAGCCCT	TTAACACAAA	CTGGGTGGTC	CTGTAGGCA	GAACATACCT	3420
	TCCTAAGTGG	TTGTAGGAAA	TTGCAAGGAA	AATAGAAGGT	CTGTCTTCTG	TCTCAAGGAG	3480
	GTACCTTTTA	ATAAAGAGAG	ACAAACCCAG	ATAGATATGT	AAACCAAAAT	ACTATGCCCC	3540
55	TTAATCTTT	ATAAGCAGCA	TTGTTAAATA	GTCTTTACGC	TATACATTC	ACAGAACTAC	3600
	CCTGTTTTCC	TTGTATATAA	TGACTTTTGC	TGGCAGAACT	GAATATATAA	CTGTAAAGGG	3660
	ATTTCGTGAG	TTGCTCCAG	TATACAAAT	CCTCCAGGAC	ATAGCCAGAA	ATCTCCATTC	3720
	CACATATGAC	TGAGTTCTTA	TCCCTGCACT	GGTACTGGCT	CTTTCTCTCT	CTTTCTCTGC	3780
	CTCAGGTTCT	GTGCTACCCA	CTGATTCCTT	TTACCTTAG	TAATAATTTT	GGATCATTTT	3840
60	CTTTCTTTTA	AAGGGGAACA	AAGCCTTTTT	TTTTTTTGAG	ACGGAGTGT	GCTCTGTCTC	3900
	CCAAGCTGGA	GTGAGTGGC	ACGATCTTGG	CTCACTCCAA	CCTCCACCTT	CCAGGTTCAA	3960
	GTGATTTCTC	TGCCCTAGCC	TCCCGAGTAG	CTGGGACTAC	GGGCACGCAC	CACCAGCTCT	4020
	GGCTAATTTT	TGTATTTTAA	GTAGAGATGG	GGTTTCACCC	TATTTGTCAG	GCTGCTCTTG	4080
	AATTCCTCAC	CTCAGGTGAT	CGCCTGTCT	CGGCCCTCCG	AAGTGTCTGG	ATTATAGGTG	4140
65	TGAGCCACCG	CACCCAGTTG	GGAACAAAGC	CTTTTAAACA	CACGTAAGGG	CCCTCAAACC	4200
	GTGGGACCTC	TAAGGAGACC	TTTGAAGCTT	TTTGAAGGCA	AACCTTACCT	TTGTGGTCCC	4260
	CRAATGATGG	CATTCTCTCT	TGAAATTTAT	TAGATACGT	TATGTCCTCC	AAGGGTACAG	4320
	GAGGGGCTAC	CCCTCAGCTA	TGGGAACACC	CAAACTAGGA	GGGGTTATTT	ACAGGAAGGA	4380
	ATGAATCCAA	GTGAAGGCTT	TCTGCTCTTC	GTGTTACAAA	CCAGTTTACG	AGTTAGCTTT	4440
70	CTGGGGAGGT	GTGTGTTTGT	GAAGGAATTT	CAAGTGTGTC	AGGACAGATG	AGCTCAAGGT	4500
	AAGGTAGCTT	TGGCAGCAGG	GCTGATACCTA	TGAGGCTGAA	ACAATCCTTT	TGATGAAGTA	4560
	GATCATGCG	TGACATACAA	AGACCAAGGA	TTATGTATAT	TTTTATATCT	CTGTGGTTTT	4620
	GRAACTTTAG	TACTTAGAAT	TTTGGCTTTC	TGCACTACTC	TTTTGCTCTT	ACGAACATAA	4680
	TGGACTCTTA	AGAAATGAAA	GGGATGACAT	TTACCTATGT	GTGCTGCCCT	ATTTCTGGTG	4740
75	AAGCAACTGC	TACTTTGCTC	CTATGCCCTC	AAAAATGATG	TGTTTTCTCT	GCTAAAGGTA	4800
	AAAGAAAGGA	AAAAAATAGT	TGGAAATATA	GACATGCAAC	TTGATGTGCT	TTTGAAGTAA	4860
	TTTATGACGC	AGAACTATA	CAATGAAGGA	AGAATTTCTAT	GGAAATTACA	AATCCAAAC	4920
	TCTATGATGA	TGCTTTCTTA	GGGAGTAGAG	AAAGGCACTG	AAATGGCAGT	TAGACCAACA	4980
	GAGGCTTGAA	AGATTCAAGT	ACAAGTAATA	TTTTGTATAA	AACATAGCAG	TTTAGGTCCC	5040
80	CATAATCCTC	AAAAATAGTC	ACAATATATA	CAAAAGTTAT	TGTTTTAGGG	TTTTTAAAAA	5100
	ACGTGTTGTA	CCTAAGGCCA	TACTTACTCT	TCTATGCTAT	CACGTCAAG	GGGTGATATG	5160

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TATGTATTAT ATAAAAA AAAACCTTAA TGCACGTGTA TCTCCTAAAT ATTTAGTAAA 5220  
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ATCTGGACTG AAGGTGTCTT TTTTAAACAC AATTAAAGT ACTTTTATA TATGTTATGT 5340  
AGTATATCTT TCTTAAACGT CTTAGTTTGT ATATTCTTAT AATTCCTATT TGTGAAGTGT 5400  
ACCTGTTCTT GTCTCTTTT TCACTCATTT TCTGCACGCA TCCCTCTTTA TATGGTTATA 5460  
GAGATGACTG TAGCTTTTTCG TGCTCCACTG CGAGGTTTGT GCTCAGAGCC GCTGCACCCC 5520  
AGCAGGCGCT GCTCATATGA GTGCAGGACG AGCTACTGCT TTGGAGCGAG GGTTCCTGCG 5580  
TTTGTAGTTG ACCTGACTTC CTCTTGAAA TGACTGTAA AACTAAATA AATTACATTG 5640  
CATTTATTTT ATATTCTTGG TTGAAATAAA ATTTAATTGA CTTTG

SEQ ID NO:78 PDO3 Protein sequence  
Protein Accession #: BAA82980

1 11 21 31 41 51  
VKSLLYQILD GIHYLHANWV LERDLKPANI LVMGEGPERG RVKIADMGFA RLPNSPLKPL 60  
ADLDPVVVTF WYRAPEILLG ARHYTKAIDI WAIGCFIAEL LTSEPIFHCN QEDIRTSNPF 120  
HHDQLDRIFS VNGFPADKDW EDIRKMEYF TLQKDFRRTT YANSLLIKYM EKEKVKPDSK 180  
VFLLQLKLLT MDPTKRTISE QALQDPYFQE DPLPTLDVFA GCQIPYFKRE FLNEDDPPEEK 240  
GDKNQQQQON QRQQTAPFQ QAAAPPAFP PQNSTQTNG TAGGAGAGVG GTGAGLQHSQ 300  
DSSLNQVPEFN KKPRLGPSGA NSGGPVPMSD YQHSRRLNY QSSVQSSQS-QSTLGYSSSS 360  
QQSSQYHPSH QAHRV

## SEQ ID NO:79 PDO5 DNA SEQUENCE

Nucleic Acid Accession #: XM\_002922  
Coding sequence: 1-2190 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
ATGAATCCTT TCCAGAAAAA TGAGTCCAAG GAAACTCTTT TTTCACTGT CTCCATTGAA 60  
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AACTATCCAC TGAGCATTCG CTTCATTGTG GTGAATGAAT TCTGCGAGCG CTTTCTCTAT 180  
TATGGAATGA AAGCTGTGCT GATCCTGTAT TTCTGTGATT TCCTGCACTG GAATGAAGAT 240  
ACCTCCACAT CTATATACCA TGCCCTCAGC AGCCTCTGTT ATTTTACTCC CATCTCGGGA 300  
CGAGCCATGT CTGACTCGTG GTTGGGAAAA TTCAAGACAA TCATCTATCT CTCCTTGGTG 360  
TATGTGCTTG GCCATGTGAT CAAGTCCTTG GGTGCCTTAC CAATCTGGG AGGACAAGTC 420  
GTACACACAG TCCATATCAT GATCGGCCGT AGTCTAATAG CTTTGGGAGC AGGAGGCATC 480  
AAACCCCTGT TGGCAGCTTT TGGTGGAGAC CAGTTTGAAG AAAACATGCG AGAGGAACGG 540  
ACTAGATACT TCTCAGTCTT CTACCTGTCC ATCAATGCAG GGAGCTTGAT TTCTACATTT 600  
ATCACACCCA TGCTGAGAGG AGATGTGCAA TGTTTTGGAG AAGACTGCTA TGCAATTGGCT 660  
TTTGAGATTC CAGGACTGCT CATGTTAATT GCATCTGTG TGTTTGCAAT GGAAGCAAA 720  
ATATACAATA AACCACCCCC TGAAGGAAC ATAGTGGCTC AAGTTTCAAA ATGTATCTGG 780  
TTTGCTATTT CCAATCGTTT CAAGAACCGT TCTGGAGACA TTCCAAAGCG ACAGCACTGG 840  
CTAGACTGGG CAGCTGAGAA ATATCCAAAG CAGCTCATTA TGGATGTAAA GGCCTGACC 900  
AGGGTACTAT TCTTTTATAT CCCATTGCCC ATGTCTCTGG CTCTTTTGGG TCAGCAGGGT 960  
TCACGATGGA CTTTGCAAGC CATCAGGATG AATAGGAATT TGGGGTTTTT TGTGCTTCAG 1020  
CCGGACACGA TGCAGGTTCT AATCCCTTTT CTGGTTCTTA TCTTCATCCC GTTGTTCAG 1080  
TTTGCTATTT ATGCTCTGCT CTCCAGTGT GGAATTAAT TCTCATCACT TAGGAAAAATG 1140  
GCTGTGTGTA TGAATCTAGC GTGCCCTGGCA TTTGCACTG CGGCAGCTGT AGAGATAAAA 1200  
ATAAATGAAA TGGCCCCAGC CAGTCCAGGT CCCCAGGAGG TTTTCTTACA AGTCTTGAAT 1260  
CTGCAGATG ATGAGGTGAA GGTGACAGT GTGGGAAATG AAAACAATTC TCTGTTGATA 1320  
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GTGCAGGAGA AGAACTGATA CAGTCTTGTG ATTCGTGAAG ATGGGAACAG TATCTCCAGC 1500  
ATGATGGTAA AGGAATCAGA AAGCAAAACA ACCAATGGGA TGCAACCGT GAGGTTTGGT 1560  
AACACTTTTC ATAAAGATGT CAACATCTCC CTGAGTACAG ATACCTCTCT CAATGTTGGT 1620  
GAAGACTATG GTGTGTCTCC TTATAGAAT GTGCAAGAG GAGAATACCC TGCAGTCCAC 1680  
TGTAGACAG AAGATAGAAA CTTTCTCTG AATTGCGTC TTCTAGACTT TGGTCCAGCA 1740  
TATCTGTTTG TTATTACTAA TAACACCAAT CAGGGTCTTC AGGCCTGGAA GATTGAAGAC 1800  
ATTCCAGCCA ACAAATGTC CATTCGCTGG CAGCTACAC AATATGCCCT GGTACAGCT 1860  
GGGGAGGTCA TGTCTCTCTT CACAGGTCTT GAGTTTCTT ATTCTCAGGC TCCCTCTAGC 1920  
ATGAAATCTG TGCTCCAGCG AGCTTGGCTA TTGACAATG CAGTTGGGAA TATCATCGTG 1980  
CTGTGTTGTG CACAGTTTCA TGGCTTGGTA CAGTGGGCGG AATTCATTTT GTTTTCTGTC 2040  
CTCCTGCTGG TGATCTGCCT GATCTTCTCC ATCATGGGCT ACTACTATGT TCCTGTAAAG 2100  
ACAGAGGATA TCGGGGCTCC AGCAGATAAG CACATCTCTC ACATCCAGGG GAACATGATC 2160  
AAACTAGAGA CCAAGAGAC AAAACTCTGA

SEQ ID NO:80 PDO5 Protein sequence  
Protein Accession #: XP\_002922

1 11 21 31 41 51  
MNPFKQKNEK ETLFSPVSL EIVPRPSPFP KKPSPITCGS NYPLSIAPIV VNEFCERFSY 60  
YGMKAVLILY FLYPLHWNED TSTSIYHAPS SLCYPTPILG AALADSWLKG FKTIYLSLV 120  
YVLGHVTKSL GALPILGGQV VHTVLSLIGL SLIALGTGGI KPCVAAPGSD QPEEKHAEER 180  
TRYPSVYPLS INAGSLISTP ITPHLRGDVQ CFGECDYALA FGVPGLLMVI ALVVFPAMGSK 240  
IYNKPPPEGN IVAQVFKCTW FALSNRPFNR SGDIFFKRQHW LDWAAEKYFK QLIMDVKALT 300  
RVLFYLYPLF MFALLDQGG SRWTLQAIRN NRNLGFFVLQ PDQMQLVNPFF LVLFIFPLFD 360  
FUYIYLVSKC GINFSLSLRM AVGHILACLA FAVAAVEIK INEMAPQSG POEVFLQVLN 420  
LADDEVKVTV VGNENNSLLI ESIRSFQKTP HYSKLHLKTK SQDFPHLKY HNLSLYTEHS 480

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VQEKMYSLV IREDGNSISS MHVKDTESKT TNGMTTVRFV NTLHKDVNIS LSTDTSLVNG 540  
EDYGVSAVRT VORGEYPAVE CRTEDKNFSL NLGLLDFGAA YLFVITNNTN QGLQAMKIED 600  
IPANKMSIAM QLPQYALVTA GEVMPFSVTGL EFSYSQAPSS HKSVLQAAML LTLAVGNIIIV 660  
LVVAQPSGLV QNAEFILFSC LLLVICLIFS IMGYIYVPVK TEDMRGPADK HIPHIQGNHI 720  
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## SEQ ID NO:81 PD06 DNA SEQUENCE

Nucleic Acid Accession #: NM\_020448

Coding sequence: 1-1221 (underlined sequences correspond to start and stop codons)

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ATCTTCGGGC ACCTCGTGGT CAGCATGTGA CTTAACCTCC AGAAGTACTG CCACATCCGC 180  
CTGGCAGGCT CCAAGGATCC CCGGGCTTAT TTCAAGACCA AGACATGGTG GCTGGGCGTG 240  
TTCTGTATGC TTCTGGGCGA GCTGGGTGTG TTGCCTCTCT AGCCTTTCGC GCGCTGTGCA 300  
CTCATCTGTC CCTCAGCGC AGTTTCTGTG ATAGCTAGTG CCATCATAGG AATCATATTG 360  
ATCAAGGAAA AGTGAAGACC GAAAGACTTT CTGAGGCGCT ACGTCTTGTG CTTTGTGTGGC 420  
TGCGGTTTGG CTGCTGTGGG TACCTACCTG CTGGTGACAT TCGCACCCTA CAGTCACGAG 480  
AAGATGACAG GCGAGAAATG CACCAGGCAC CTGCTGAGCT GGCCCTTCTT TTTGTACATG 540  
CTGGTGGAGA TCATCTGTGT CTGCTGTGCT CTCTACTTCT ACAAGGAGAA GAACGCCAAC 600  
AACAATGTCT TGATCTTTCT CTGGTGGCGG TTACTTGGCT CCATGACAGT GGTGACAGTC 660  
AAGGCGCTGG CTGGGATGCT TGTCTGTGTC ATTCAAGGGA ACCTGCAGCT TGAATACCCC 720  
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GAGCACACCA AGAAGGAATG A

35  
SEQ ID NO:82 PD06 Protein sequence  
Protein Accession #: NP\_065181

40  
1 11 21 31 41 51  
MDGSHSAALK LQQLPPTSSS SAVSEASFYS KENLIGALLA IFGHLVVSIA INLQRYCHIR 60  
LAGSKDPRAY FKRTKMWLGL FLMLLGELGV PASYAFAPLS LIVPLSAVSV IASAIIGIIF 120  
IKEKMKPKDF LRRYVLSFVG CGLAVVGTYL LVTFAPNSHE KMTGENVTRH LVSMPFLLYH 180  
LVBILLFCLL LYFKENKMAN NIVVILLLVA LLGSMFVVTV KAVAGMLVLS IQGNLQLDYP 240  
IPYVPMVCHV ATAVYQAAPL SQASQMYDSS LIASVGYTIL TTIATAGAI FYLDPIGEDV 300  
45  
LHICFPAFCG LIAFLGVFLI TRNRKKPIFF EPIYISDAMP GMQNHDKGM TVQPELKASF 360  
SYGALENNDN ISEIYAPATL FVMQEBHGRS SASGVPRVRL EHTKKE

## SEQ ID NO:83 PD08 DNA SEQUENCE

Nucleic Acid Accession #: NM\_032712

Coding sequence: 555-808 (underlined sequences correspond to start and stop codons)

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1 11 21 31 41 51  
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ACCTGGGCGA GAGCTGGTTC TGCTCTCTGT GCAGGGACAC TGAGCTGGCT ATCTCGGGCG 180  
TTCTGGGCAAG AACTGCAACA GGCTCTCTCT GGTCTCTCAG GTGTACAGCC GGGCCCTGTC 240  
CTTGTGCTTC AGCTCTCGAG AGCTGCTGCT GCGGGGTGAC CTGATCCAAC CTGATAAGGT 300  
GCCATCTTCA GCTACCACTG CAAGGCGCTG AGGGCAACAG CAGCAGGGCA CTGCCACACC 360  
GGCTGCTGAT GGCCTGTGTG CAGCTGGGAG TCTTCCCGGC ACTTCGAGGC CACTGAGCCA 420  
CCCTTCCAGC CCCAGCCAC CATGACACAG GGTATCCAGC TTCTCTCTCA ACCTCGTCTT 480  
CTGCCCTGTA GCCAGTGACG CCAAGGACA TGCTGTGTAC CCAGTCTCTG TACCAGCACT 540  
AGCTGGTCAA GGGCATGACA GTGCTGGAGG CCGTCTTGGA GATCCAGGCC ATCACTGGCA 600  
GCAGGCTGCT CTCCATGGTG CCAGGGCCCG CCAGGCCACC AGGCTCATGC TGGGACCCAA 660  
65  
CCCACTGAC AAGGACTTGG CTGCTGAGCC ACACACCCAG GAGAAGGTGG ATAAGTGGGC 720  
TACCAAGGGC TTCTGTCAGG CTAGGGGAGG AGCCACCCCC GCTTCCCTAT TGTGACCAGG 780  
CCTATGCGGA GAGCTGTCTC ATACGCCACC GTGAGACCTG GGCCCTGGCT TCAAGGACAG 840  
ACACCGGCTG GCCTGGTGTG CCAGGGGTGA AGCAGGCCAG AATCTGTGGG GAGCTGTCTC 900  
TGCTTTGAGC TGCAATCAGG AAGTGCGGGA CATGCTAGGG GAGGCCAAAA GCCTTGGGCA 960  
70  
CTACCTCTCC TGTGGAGCTG TTCTGCTGTC GTGAGCTAG CCACACCTGT ACACCATGTT 1020  
CAAGGGTACC GGAAGAGAAG GGTGTCTGCC CCCAACCTCC CTTGTGGGTG TCACTGGCCA 1080  
GATGTCTAGA GGAAGACAGG CCTGTGTAGT GGACACTGAC CATGAGTCCC TGGGGGGAGT 1140  
GATCCCCAGC GCATCGTGTG CCATGTTGCA CTCTCTGCCA GGCAGCAGGG TGGGTGGGTA 1200  
75  
CCATGGGTGC CCACCCCTCC ACCACATGGG GCCCAAAAGC ACTGCAGGCC AAGCAGGGCA 1260  
ACCCACACCC CTTGACATAA AAGCATCTTG AAGCTTTTAA AAAAAAAA AAAAAA

SEQ ID NO:84 PD08 Protein sequence

Protein Accession #: NP\_116101

80  
1 11 21 31 41 51

MTVLEAVLEI QAITGSRLLS MVEGPARPPG SCWDPQTCTR TWLLSHTPRR RMISGLPRAS 60  
CRLGEEPPPL PYCDQAYGEE LSIRHRETWA WLSRTDTAMP GAPGVKQARI LGELLIV

# 5 SEQ ID NO:85 PDT1 DNA SEQUENCE

Nucleic Acid Accession #: NM\_000693  
Coding sequence: 53-1591 (underlined sequences correspond to start and stop codons)

10 1 11 21 31 41 51  
AGCCGGTGGC CCGCAGACTA GGGCGCCTCG GGCAGGGAG CGCGGAGGAG CCATGGCCAC 60  
CGCTAACGGG GCGGTGGAAG ACGGCGAGCC GGACGGGAAG CCGCGGCGCC TGCGCGCGCC 120  
CATCCGCAAC CTGGAGGTCA AGTTCACCAA GATATTTATC AACAAATGAAT GGCACGAATC 180  
CAAGAGTGGG AAAAAAGTTG CTACATGTAA CCCTTCAACT CGGAGGCAAA TATGTGAAGT 240  
GGAAGAGGA GATAAGCCCG ACGTGGACAA GGCTGTGGAG GCTGCACAGG TTGCCTTCCA 300  
GAGGGGCTCG CCATGGCGCC GGCTGGATGC CCTGAGTCGT GGGCGGCTGC TGCACACGCT 360  
GGCTGACCTG GTGGAGAGGG ACCCGGCCAC CTGCGCCGCC CTGGAGACGA TGGATACAGG 420  
GAAGCCATTT CTTCATGCTT TTTTCATCGA CCTGGAGGGC TGTATTAGAA CCTTCAGATA 480  
CTTTGCGAGG TGGGACAGCA AAATCCAGGG CAAGACCATC CCCACAGATG ACAACGTCTG 540  
ATGCTTCACC AGGCATGAGC CCATTGGTGT CTGTGGGGCC ATCACTCCAT GGAACCTTCC 600  
CCTGCTGATG CTGTGTGGGA AGCTGGCACC CGCCCTCTGC TGTGGGAACA CCATGGTCTC 660  
GAAGCCCTGG GAGCAGACAC CTCTCACCGC CCTTTATCTC GGCTCTCTGA TCAAGAGGCG 720  
CGGGTTCCTT CCAGGAGTGG TGAACATTGT GCCAGGATTC GGGCCACAG TGGAGACAGC 780  
AAATTTCTCT CACCTTCAGA TCAACAAGAT CGCCTTCACC GGCTCCACAG AGGTGTGAAA 840  
ACTGGTTAAA GAGCTGCGT CCGGAGCAA TCTGAAGCGG GTGACGCTGG AGCTGGGGGG 900  
GAAGAACCCC TGCACTGTGT GTGCGGACGC TGAATTGGAG TTGGCAGTGG AGTGTGCCCC 960  
TCAGGGAGTG TTCTTCAACC AAGGCCAGTG TTGCACGGCA GCTCCAGGG GTTCTGTGGA 1020  
GGAGCAGGTC TACTCTGAGT TTGTGAGCGG GAGCGTGGAG TATGCCAAGA AACGGCCCGT 1080  
GGGAGACCCC TTGATGTGCA AAACAGAACCA GGGGCGCTCAG ATTGATCAAA AGCAGTTCGA 1140  
CAAAATCTTA GAGCTGATCG AGAGTGGGAA GAAGGAAGGG GCCAAGCTGG AATGCGGGGG 1200  
CTCAGCCATG GAAGACAAGG GGCTCTTCAT CAACCCCATC GTCTTCTCAG AAGTCACAGA 1260  
CAACATGCGG ATTGCCAAG AGGAGATTIT CGGGCCAGTG CAACCAATAC TGAAGTTCAA 1320  
AAGTATCGAA GAAGTGATAA AAAGAGCGAA TAGCACCGAT TATGGACTCA CAGCAGCGCT 1380  
GTTTCAAAA AAATCTGACA AAGCCCTGAA GTTGGCTTCT GCCTTAGAGT CTGGAACGGT 1440  
CTGATCAAC TGCTACAAAG CCTCTATGC ACAGGCTCCA TTTGGTGGCT TFAAAATGTC 1500  
AGGAATCTTA GAGCAACTAG GTGAATACGC TTTGGCCGAA TACACAGAAG TGAAGAACTG 1560  
CACCATCAAA CTGGCGGACA AGAACCCCTG AAGGAAGGCG GGGGCTCCTT CCTCAAACT 1620  
CGGACGGCGG AATGTGGCAG ATGAATATGT CTGGAGGAAA AAAATGACAT TTCTGACCTT 1680  
CCCGGAGCAC GTTCTTTGG AGGCTTTACA TCTACTGGAG TTGAATGATT GCTGTTTTCC 1740  
TCTCACTCTC CTGTTTATTC ACCAGACTGG GGATGCTATG AGGTGTCTCT TGAATCTGCA 1800  
GTCTGCGCTG GGGAGGGAGC TGTGGCCCAT TTCTGTGTTT CCTTTAAAC CAGATCTCTG 1860  
AGACAGTGAG ATACTCAGGG CGTTGTTAAG AGGAGTGGT ATTTGAAGTG TCCAGCAGTG 1920  
GCTTGAATAG CTTTGCCGAA TCTGACTCCA GTAAGAATGT GGGAAAACCC CCTGTGTGTT 1980  
CTGCAGCAG GCGCTCTGCA CCAGCGGTCT CCTCAGGGTG GACCTGCTTA CAGAGCAAGC 2040  
CAGCCCTCTT TCGGAGGTGA AGGTGGGACC ATTCCTTGGG AAGGATTCA CAGTAAGGTT 2100  
TTTTGGTTTT TGTTTTTTGT TTTCTTGTIT TTAaaaaaag GATTTCACAG TGAAGAAATT 2160  
TTGGTTAGTG CATACCGTGG AAGGGCGCCA GGGTCTTTGT GGATTGCAATG TTGACATTGA 2220  
CCGTGAGTGT CGGCTTCAAA CCAATATGTC CTTTGGAATA TGACAGAATC AATAGCCCGG 2280  
AGAGCTTAGT CAAAGACGAT ATCAGGCTCT ACCTTAACCA AGGCACCTTC TTAAGCAGAA 2340  
AATATTGTTG AGGTACCTT TGCTGCTAAA GATCCAAATC TCTAACGCCA CAACAGCATA 2400  
GCAAACTCTA GGATAATCA CCTGCTCAT TGAACAAATCA GAGCTGAAT TCACTTTAAT 2460  
AAATACGCA TTTCTATCAC GTTCACTAAC AGCTTATGAT AAGTCTGTGT AGTCTTCTCT 2520  
TTCTCCAGTT CTGTATCCCA ATTTAGATTA GTAAAGCGTA CACAAGTGA AAGACTGCTG 2580  
TAATACACA GCTTCTTAT TTTTAAATCC TATTTTGATA TTAATTTCTG ATTAGTTAGT 2640  
AAATACACC TGGATTCTAT GGAGGAACCT GGTCTTCATC CAAGTGGCCT GAGTATTTC 2700  
CTGGCAGGTT GTGAATTTTT CTTTTCTCTT TTGGGAATCC AAATGATGAT GTGCAATTC 2760  
ATGTTTAAAC TTGGGAAACT GAAAGTGTTC CCAATATAGT TCAAAAACAA AAACAAATGT 2820  
GTTATCCAG GGATCTTTT ATGTTTACTA ACTAGTACTT TCCTAATTGG GAAAGTAGTG 2880  
CTTAAGTTTG CAAATTAAGT TGGGAGGGC AATAATAAAA TGAGGGCCCG TAACAGAAC 2940  
AGTGTGTGTA TAACGAAAC CATGTATAAA ATGGGCTAT CACCTTGTG AGAGATATAA 3000  
ATTACCATC TTTGGCTTCC TTCACTAGCT AACACTTATC ACTTATCTA CCAATAACT 3060  
GTTAATCAG GATTTGGCTT CATACACTGA ATTTTCAGTA TTTTATCTCA AGTAGATATA 3120  
GACACTAAC TTGATAGTGA TACGTTAGAG GGTTCCTATT CTTCATTTGT ACGATAATGT 3180  
CTTTAATATG AAATGCTACA TTATTATAA TTGGTAGAGT TATTGTATCT TTTTATAGT 3240  
GTAAGTACAC AGAGGTGGTA TATTAAACT TCTGTAATAT ACTGTATTTA GAAATGGAAA 3300  
TATATATAGT GTTAGGTTTC ACTTCTTTTA AGGTTTACCC CTGTGGTGTG GTTTAAAAAT 3360  
CTATAGGCTT GGGAAATCCG ATCTTAGCTG CAGATGCGAT CCCACAATGC GAGAATGATA 3420  
AAATAAAATT GGATATTGTA GA

# 70 SEQ ID NO:86 PDT1 PROTEIN SEQUENCE

Protein Accession #: NP\_000684

75 1 11 21 31 41 51  
MATANGAVEN GQPDGKPPAL FRPIRNLEVK FTKIFINNEW HESKSGKKFA TCNPSTREQI 60  
CEVEEGDKPD VDKAVEAQV APQRGSPWRR LDALSRRLL HQLADLVERD RATLAALETH 120  
DTGKPFLLHAF FIDLEGCTRT LRYFAGWADK IQGKTIPTDD NVVCFTRHEP IGVCAGAITPW 180  
NFPLMLVWK LAPALCCGNT MVLKPAEQTP LTALYLSLI KEAGFPFGV NVVPGFPTV 240  
GAAISSHPQI NKIAPTGSTV VGLVKEAAS RSNLRVTLE LGGNPCIVC ADADLDLAVE 300

CAHQGVFFNQ GQCCTAASRV FVEEQVYSEF VRSVEYAKK RFVGDPPFDVK TEQGPQIDQK 360  
 QFDKILELIE SGKKEGAKLE CGGSAMEDKG LPIKPTVFSE VTDHRIAKE BIFGPVQPIIL 420  
 KFKSTEEVTK RANSTDYGLT AAVFTKNLDK ALKLASALES GTVWNCYNA LYAQAPFGGF 480  
 KMSQNGRELQ EYALAEYTEV KTVTIKLGDK NP

5

## SEQ ID NO:87 PDV3 DNA SEQUENCE

Nucleic Acid Accession #: NM\_032642

Coding sequence: 184-1263 (underlined sequences correspond to start and stop codons)

10 1 11 21 31 41 51  
 | | | | | |  
 GACCATTAGC AGGCACCCAG GCCTGTCTTT GGCTCGGAAA CGGTGGCCCC CAATGTAGCC 60  
 TAGTTTGAAC CTAGGAACCTG CAGGACCAGA GAGATTCCAC TGGAGCCTGA TGGACGGGTG 120  
 ACAGAGGGAA CCCTACTCTG GAAACTGTCA GTCCACGGGC ACTGGGAGG GCTGAGGCCG 180  
 15 ACCATGCCCC GCGTCTCTGT GCTGTTCACG GCTGCTCTGC TGTCCAGCTG GGCTCAGCTT 240  
 CTGACAGACG CCAACTCTCTG GTGGTCAATTA GCTTTGAACC CGGTGCAGAG ACCCGAGATG 300  
 TTTATCATCG GTGCCAGCC CGTGTCCAGT CAGCTTCCCG GGCTCTCCCT TGGCCAGAGG 360  
 AAGCTGTGCC AATTGTACCA GGAGCACATG GCCTACATAG GGGAGGGAGC CAAGACTGGC 420  
 ATCAAGGAAT GCCAGCACCA GTTCCGGCAG CGCGGTGGA ATTGCAGCAC AGCGGACAAC 480  
 20 GCATCTGTCT TTGGGAGAGT CATGCAGATA GGCAGCCGAG AGACCCGCTT CACCCACGCG 540  
 GTGACGCCCG CGGCGGTGGT CAACGCCATC AGCGGGGCTT GCGCGGAGGG CGAGCTCTCC 600  
 ACCTGCGGCT CACGCGTGAC GCGCGGGCCC AAGGACCTGC CCGGGAGCTG GCTGTGGGGC 660  
 GGCTGTGGGG ACAACGTGGA GTACGGCTAC CGCTTCGCCA AGGAGTTTGT GGATGCCCGG 720  
 GAGCGAGAGA AGAAGTTTGC CAAGGATCA GAGGAGCAGG GCCGGTGTCT CATGAACCTG 780  
 25 CAAACACAGC AGGCGGTGCG CAGGGCTGTG TATAAGATGG CAGACGTAGC CTGCAATGCG 840  
 CACGCGCTCT CGGGTCTCTG CAGCCTCAAG AACTGCTGGC TGCAGCTGGC CGAGTTCGCG 900  
 AAGGTCCGGG ACCGGCTGAA GGAGAAGTAC GACAGCGCGG CGCCATGCG CPTACCCGCG 960  
 AAGGGCGCGG TGGAGCTGGT CAACAGCCGC TTCAACCCAGC CCACCCCGGA GAACCTGGTC 1020  
 TATGTGAGAC CCAGCCGCCA CTACTGCCCT CGCAACGAGA GCACGGCTCT CCGTGGCAGG 1080  
 30 CAGGCGCGCC TCTGCAACAA GACCTCGGAG GGCATGGATG GCTGTGAGCT CATGTGCTGC 1140  
 GGGCGTGGCT ACAACCAAGT CAAGAGCGTG CAGGTGGAGC GCTGCCACTG CAAGTTCAC 1200  
 TGGTCTGTCT TGCGTGGTGG TAAGAAGTGC ACGGAGATCG TGGACCACTA CATCTGTAAA 1260  
 TAGCCCGGAG GGCTCTCTCC CGGCCCCCCC TGCACCTGCG CTCACAAAGG TCTATATATAT 1320  
 35 ATAAATCTAT ATAAATCTAT TTTATATTG TATAAGTAAA TGGGTGGGTG CTATACAATG 1380  
 GAAAGATGAA AATGAAAGG AAGAGCTTAT TTAAGAGACG CTGAGATCT CTGAGAGATG 1440  
 GACTTTGCTG GTTCTCTCTC CTGTGTGGGT GGGAGACAGG GCTTTTCTCT TCCTCTGGC 1500  
 GAGGACTCTC AGGATGTAGG GACTTGGAAA TATTTACTGT CTGTCCACCA CGGCTTGGAG 1560  
 GAGGGAGGTT GTGGTGGTAT GGAGGAGATG ATCTTGTCTG GAAGTCTAGA GTCTTTGTTG 1620  
 40 GTTAGAGGAC TGCCTGTGAT CCTGGCCACT AGGCCAAGAG GCCCTATGAA GGTGGCGGGA 1680  
 ACTCAGCTTC AACCTCGATG TCTTCAGGGT CTGTCCAGA ATGTAGATGG GTTCCGTAA 1740  
 AGGCTGTGTT CTCCTTACT CTCTCATCCA CGTGCACCTG TCCGGCATCT GCAGTTTACA 1800  
 GGAAGGCTCT CTTCCTTAAA ATGAGAAGTC CAAGGTCACT TCTGGCCAGG TGACCCAGAG 1860  
 GAGATCTGCA CCTCCCGGAC TTCAGGCTGT CCTTTCCAGC GAGAATTCTT CATCTCCAC 1920  
 45 GGTTCACATG TGCCTACCTG AAGAGGAAAG GGGGCCATTT GACCTGACAT GTACAGAAAG 1980  
 CCTTAACTAG AATGTTTGGC CCGTGGCTGC AGAAGCCAGG GTGCATGACC AGGCTGCGTG 2040  
 GACGTTATAC TGTCTTCCCG CACCCCGGGG GAGGGGAAGC TTGAGCTGCT GCTGTCACTC 2100  
 CTCCACCGAG GAGGGCTTCA CAAACCCACG GACGCTGCAA CGGCTCAGCG TGGCGGGCCC 2160  
 GCGGTGCTCA TCATCTCTGC CCCAGGTGTA CGGTTTCTCT CTGACATTA ATGCCCTTCA 2220  
 TGGAAAAAAA AAAAAGAAAA AAAAAAAAAA AA

SEQ ID NO:88 PDV3 Protein sequence

Protein Accession #: NP\_116031

55 1 11 21 31 41 51  
 | | | | | |  
 MFSLLLFLTA ALLSSWAQLL TDANSWWSLA LNFVORPEMF IIGAQPVCSSQ LPGLSPGQRK 60  
 LCQLYQEHMA YIGEGAKTGI KECQHQRQR RNWCSTADNA SVFGRVMQIG SRETAFTHAV 120  
 SAAGVVVAIS RACREGELST CGCSRTARPK DLPRDLWGG CGDNVEYGYR FAKEPVDARE 180  
 60 REKNFARGSE EQGRVLMNLQ NNEAGRRVAV KMADVACKCH GVSGCCSLKT CWLQLAEFRK 240  
 VGDRLEKEDY SAAAMRVTRK GRLELVNSRF TQPTPEDLVY VDPSPDYCLR NESTGSLGTQ 300  
 GRLCNKTSBG MDGCELMCCG RGYNQPKSVQ VERCHCKPHW CCFVRCKKCT EIVDQYICK-

## SEQ ID NO:89 PDT8 DNA SEQUENCE

Nucleic Acid Accession #: NM\_033280

Coding sequence: 58-638 (underlined sequences correspond to start and stop codons)

65 1 11 21 31 41 51  
 | | | | | |  
 GGCAGCCGTC TGTGCCACCC AGAGCCGGCG GGCCGCTAGG TCCCGGAGA CCTGTCTATG 60  
 70 GTGCGTGGCG GCGCCGTGGG GGCTCATCTC CCCCGTCCG GCTTGGATAT CTTCGGGAC 120  
 CTGAAGAGA TGAACAAGCG CCAGCTCTAT TACCAGGTTT TAAACTTCGC CATGATCGTG 180  
 TCTTCTGCAC TCATGATATG GAAAGGCTTG ATCGTGCTCA CAGGCACTGA GAGCCCATC 240  
 GTGGTGGTGC TGAGTGGCAG TATGGAGCCG GCCTTTCACA GAGGAGACCT CCGTTCCTC 300  
 75 ACAATTTTCC GGAAGACCC AATCAGAGCT GGTGAATAG TTGTTTAA AGTTGAAGGA 360  
 CGAGACATTC CAATAGTTCA CAGAGTAATC AAAGTTCATG AAAAGATTA TGGAGACATC 420  
 AAATTCTCTA CTAAAGGAGA TAATAATGAA GTTGATGATA GAGGCTTGTA CAAAGAAGGC 480  
 CAGAACTGCG TGGAAAAGAA GGACGTGGTG GGAAGAGCAA GAGGGTTTTT ACCATATGTT 540  
 GGTATGCTCA CATATAAT GAATGACTAT CCAAAATTC AATATGCTCT TTTGGCTGTA 600  
 80 ATGGGTGCAT ATGTGTACT AAAACGTGAA TCCTAAATG AGAAGCAGTT CCGGGACCA 660  
 GATTGAAATG AATTCTGTG AAAAAGAGAA AACTAATAT ATTGAGATG TTCCATTTTC 720

TGTATAAAG GGAACAGTGT GGAGATGTTT TTGTCTTGTC CAAATAAAG ATTCAACAGT 780  
 AAAAAAAAAA AAAA

5 SEQ ID NO:80 PDV9 Protein sequence  
 Protein Accession #: NP\_150596

1 11 21 31 41 51  
 10 MVRAGAVGAH LPASGLDIFG DLKFMNKRQL YYQVLNPFMI VSSALMIWKG LIVLTGSBSP 60  
 IVVVLSSGME PAFHRGDLLE LTNFREDPIR AGEIVVFKVE GRDIPFIVERV IKVHEKDNGD 120  
 IKFLTKGDNM EVDRLGLYKE GQNWLEKRDV VGRARGFLPY VGMVTIIMND YPKFYALLA 180  
 VMGAYVLLKR ES

15 SEQ ID NO:91 PDV5 DNA SEQUENCE  
 Nucleic Acid Accession #: NM\_016590  
 Coding sequence: 691-975 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
 20 GATTACTCAC ACAGTCTTGA AGATGCAATG TCAGCTATTT AGGACAGAAA CATCCAAGGC 60  
 CGTGTGAGAA CTCAATATACG ACTACATATG CATTAAGGCA GGAACCTGGCA GGCCCTCAGGG 120  
 TAGCCCAACT ATAGGACTCG TGCTTCTCGT ACGCTGGGCT ATAATCTATG AAACCTGAGCT 180  
 CCAGAGCCAG CCAATCACTT AGCTCCTCAT AACAAGTCTA ACTGGCTCTG GAAAGCTGAA 240  
 AGGGCTGCAC TGAACAACA CAGATGAGAT ATTCTACACA TTAATCTACT TATCTGGAAT 300  
 25 CACTTTGGCT CTAAAGGCCA GAGAAAAATC ACAGCTTCCT TGTCGGAGGG GAAAAGGACA 360  
 GGTGATCTGG GGAAGACGCA GCTACACCTG GAGCAAGGTC TCTTCCCGCC TTGGCAATCT 420  
 CAGCTGTGCC GGCGCTACGG GACCCGAGCC GTCCAGAA CCAAGGGCCA GGCACGGCAG 480  
 CAAACGCGTG AGTGTGCTG CTTCTGGTGA CTATATGAGA ATGGAACCTT CTAAGGAAGC 540  
 CAGGTGTGTA GAATGTGTTAC CCCCTTTACT CAGAGATAAC ATAGATTATC CAGGCTGAGA 600  
 30 TGGAAGACAA GCCCTTTATT GAATTTTCAA CACAGACTCC CTGCTTCTCA TCTCCTTAAT 660  
 AAAATTTCAT TAAATTCGCC TTGAATTCCT ATGTTCAAAAT CTCCATTGTG TGACAGACAA 720  
 AGCCAACAACT ACTCTAAACT GAGGCTGCA AGTCATTTC TTTGTATTTT GTCCAGAAA 780  
 TTTCCCAATG GAAGACTTCA CCTCCTACAA CTCCGAAGAA AACCTTACT GTCCAGAAC 840  
 35 GTCAACAGCA ACCATCCGCA GTCAATCAAG TGAAGCTTTT CACAGCTTTT GTACATTCTC 900  
 TGTGTCAATA TACAACCTGAG TTACAGACTG TCCCTTGGCT CCTGACCCTT TACAACACT 960  
 AAAAGTTTGG TTGACTCAA CTTCAGCTG CTCAATCTGT AGTAAGTGAT GTTCACTCCA 1020  
 GAACACATCT ATGATGAGAA CTTTCTAAAA GACCAGCACT GCTCTTCCCC TCTTAATATC 1080  
 ATAATATACA TGATTAACCTG AAACATGTTA CTGGGACTCG ACATTTTCTT GGGGATTGAA 1140  
 40 ATCTTTAGTC CTTGGAGCTG TCACATAGCA GGGGCAACCT CACACTGAAA CAAAGGAAGT 1200  
 GATGTCCCAT TATTATCCAC CCTGAGCCAC CATAATATGC TGTTTACATT TATTTTCTTC 1260  
 AGCCTGTGCA AAACAAGCA ATGGAAGAGG AAATCAAAAA ATATACATAC TAGTACCAAT 1320  
 ATCTTCTTTT GCCTAAARAT ACTAATGCAC CAGCTCAGTC TGCTTCTCTC AGGCATCAAT 1380  
 CTCAATTCAT CAGGACTTGT ATTAGCAGGT TCTGGCTAGA GAGACTATCT CCTGTATCA 1440  
 45 CGATCAATTA ATGTTTCTG GTGATCACAT CAGGCCCTAT CTAAGAAGCT CATGGTATAC 1500  
 AAGGGTCAAC CAAATAGCTG AGTGCACTCC TTGCTCATAT TTCTTCAATC TTAACCCCGC 1560  
 AAACAAGAT TAAGATGATC CCAATRAAAG AAAAATTGCT CAGGAAACTG AACCTTTTTC 1620  
 TGAACCAAGC ACTGTACGCA AATCTCAGGT ATTAGAGCAA CTATGGTTGA TTGAAAAGTG 1680  
 TCTCAAAATC TGGGCCAAGA ATGATGCTTA GGTCCATAAG CTAATTTGTC TGGCCTTGCC 1740  
 50 ATTTAGCTAA GCCAAGAGAA GTCACTCATG AGTAAACTAT AGAAGACGTT CAGACCCATC 1800  
 CTGTTAGTAT GTCAATCAAA CTAAGACTGG CAGGGTATTA ACTCCATTCC AGGTGACATG 1860  
 GATAAAGAGC CCCATTATTT TCACAGTGCC AGCCTCTACC TAAGGAAACC CTAGACCTTG 1920  
 GAACCAAGTT CCTGTAGGG AACTGCTGAC AGTTTCAATG CTGACAGTTG GAGCCATGTC 1980  
 CTCAATAGTT AACTGAAGG AAAAATAGTT GCTTTTAAAA ATGTCAGCAA GAAGCCCTGC 2040  
 55 CTCACTTAA CAAAGCAAAA AAAAATGCTT TAATTCAAAT TAAAAATCAT GATACTAAAA 2100  
 AAAAAAAA

SEQ ID NO:92 PDV5 Protein sequence  
 Protein Accession #: NP\_057674

60 1 11 21 31 41 51  
 MQCQLFRTE SKAVSELNYD YCIKAGTGR PQGTPTGLV LLVRWAIYE TELQSQPT

65 SEQ ID NO:93 PEE5 DNA SEQUENCE  
 Nucleic Acid Accession #: NM\_002606  
 Coding sequence: 61-1842 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
 70 CGCGGCGGCT GGCGTCGGGA AAGTACAGTA AAAAGTCCGA GTGCAGCCGC CGGGCGCAGG 60  
 ATGGGATCCG GCTCTCTCCAG CTACCGGCCC AAGGCCATCT ACCTGGACAT CGATGGACGC 120  
 ATTCAAGAGG TAATCTTCAG CAAGTACTGC AACTCCAGCG ACATCATGGA CCTGTCTGTC 180  
 ATCGCCACCG GCTCTGCTCG GAACACGACC ATCTCCCTGC TGACCAACGA CGACGCCATG 240  
 75 GTCTCCATCG ACCCCACCAT GCCCGCGAAT TCAGAACGCA CTCCGTACAA AGTGAGACCT 300  
 GTGGCCATCA AGCAACTCTC CGCTGCTGTC GAGGACAAGA GAACCACAAG CCGTGCCAG 360  
 TCTGCTGAGA GACCACTGAG GACAGACGCG GTTGTGGGCG TGGAGCAGCC CCGGAGGGAA 420  
 GGAGCATTTG AAATGGAGCA GGTAGAGCCC AGGCCACAG AGCCCCAGGG CTGCTACCA 480  
 GAAGGATTTG AACTCCCTCC AGAGAGAGAA GAATTAATCC AGAGCGTGTG GCGCAGGTT 540  
 80 GCAGAGCAGT TCTCAAGAGC ATTCAAAATC AATGAACCTA AAGCTGAAGT TGCAATAC 600  
 TTGGCTGTCC TAGAGAAACG CGTGAATTG GAAGGACTAA AAGTGGTGA GATGAGAAA 660

5 TGCAAGAGTG ACATTAAAGAA GATGAGGGAG GAGCTGGCGG CCAGAAGCAG CAGGACCAAC 720  
 TGCCCTCTGTA AGTACAGTTT TTTGGATAAC CACAAGAAGT TGACTCCTCG ACGCCGATGT 780  
 CCCACTTACC CCAAGTACCT GCTCTCTCCA GAGACCATCG AGGCCCTGCG GAAGCCGACC 840  
 TTTGACGCTT GGCTTTGGGA GCCCAATGAG ATGCTGAGCT GCCTGGAGCA CATGTACCAC 900  
 GACCTCGGGC TGGTCAGGGA CTTACAGATC AACCTGTGCA CCTTCAGGAG GTGGCTGTTC 960  
 TGTGTCCACG ACAACTACAG AAACAACCCG TTCCACAACT TCCGGCACTG CTTCTGCCGTG 1020  
 GCGCAGATGA TGTACAGCAT GGTCTGGCTC TGCAGTCTCC AGGAGAAGTT CTCACAAACG 1080  
 GATATCTCTGA TCCTAATGAC AGCGGCCATC TGCCACGATC TGGACCAATC CGGCTACAAC 1140  
 10 AACAGTATCC AGATCAATGC CGGCACAGAG CTGGCGGTCC GCTACAATGA CATCTCACCG 1200  
 CTGGAGAACC ACCACTCGCG CGTGGCTTTC CAGATCCTCG CCGAGCCTGA GTGCAACATC 1260  
 TTCTCCAAACA TCCCACTCTGA TGGGTTCAAG CAGATCCGAC AGGGAATGAT CACATTATTC 1320  
 TTGGCCACTG ACATGGCAAG ACATGCAGAA ATTATGGATT CTTTCAAAGA GAAATGGAG 1380  
 AATTTTGACT ACAGCAACGA GGAGCACATG ACCCTGCTGA AGATGATTTT GATAAATGC 1440  
 15 TGTGATATCT CTAACGAGGT CCGTCCAATG GAAGTCGAG AGCCTTGGGT GGAAGTTTGA 1500  
 TTAGAGGAAT ATTTTATGCA GAGCGACCGT GAGAAATCAG AAGGCCTTCC TGTGGCACCG 1560  
 TTCAATGACC GAGACAAAGT GACCAAGGCC ACAGCCAGA TTGGGTTTAT CAAGTTTGTG 1620  
 CTGATCCCAA TGTTTGAAGT AGTGACCAAG CTCTTCCCCA TGGTTGAGGA GATCATGCTG 1680  
 CAGCCACTTT GGGAACTCCG AGATCGCTAC GAGGAGCTGA AGCGGATAGA TGACGCCATG 1740  
 20 AAGAGTTTAC AGAAGAAGAC TGACAGCTTG ACCTCTGGGG CCACCGAGAA GTCCAGAGAG 1800  
 AGAAGCAGAG ATGTGAAAAA CAGTGAAGGA GACTGTGCTT GAGGAAAGCG GGGGGCGTGG 1860  
 CTGCAATTTCT GGACGGGCTG GCCGAGCTGC GCGGGATCCT TGTGCAAGGA AGAGCTGCC 1920  
 TGGGCACCTG GCACCAACAAG ACCATGTTTT CTAAGAACCA TTTTGTTCAC TGATACAAA 1980  
 AAAAAAAAAA A

25 SEQ ID NO:94 PEE8 Protein sequence  
 Protein Accession #: NP\_002597

30 1 11 21 31 41 51  
 | | | | |  
 MGSQSSSYRP KAIYLDIDGR IQKVIPSRYC NSSDMDLPC IATGLPRNIT ISLLTTDDAM 60  
 VSIDTTPAN SERTPYKVRP VAIKQLSAGV EDKRTTSRQG SAERPLDRRR VVGLBQPRRE 120  
 GAFESGQVEP RPREPQCVQ EGQRIPPERE ELIQSVLAQV AEQFSRAPKI NELKAEVANH 180  
 LAVLEKRVEL EQLKVEIEK CKSDIKKRE ELAARSRTN CPCKYSFLDN HKKLTPRRDV 240  
 35 PTPPKYLLSP ETIEALRKPT FIVWLWEPNE MLSCLEHMYH DLGLVRDFSI NPVTLLRWLF 300  
 CVMDYRNRP FHNFRHCPV AQMMYSMVWL CSLQKFSQT DILILMTAAI CHDLDPGYN 360  
 NTYQINARTE LAVRYNDISP LENEHCVAVF QLLAEPCNI PSNIPPDGFK QIRQGMITLI 420  
 LATDMARHAE IMDSFKEME NFDYSNEEHM TLLKMLIKC CDISNEVRPM EVAEPWVDCL 480  
 LEEYPMQSDR EKSGLEPVAF FMDRDKVTKA TAQIGFIKPV LIPMFETVTK LFPVVEEIML 540  
 40 QPLWBSRDY BELKRIDDAM KELQKTDLSL TSGATEKSRE RSRDVKNSEG DCA

## SEQ ID NO:95 PEG4 DNA SEQUENCE

Nucleic Acid Accession #: none  
 Coding sequence: 41-559 (underlined sequences correspond to start and stop codons)

45 1 11 21 31 41 51  
 | | | | |  
 CAGTCACAGG CGAGAGCCYT GGGATGCACC GGCCAGAGGC ATGCTGCTGC TGCTCACGCT 60  
 TGCCCTCTCG GGGGGCCCCA CCTGGGCAGG GAAGATGTAT GGCCCTGGAG GAGGCAAGTA 120  
 50 TTTCAGCACC ACTGAAGACT ACGACCATGA AATCAGAGG CTGCGGTGTG CTGTAGGTCT 180  
 TCTCTCGTGT AAAAGTGTCC AGGTGAAACT TGGAGACTCC TGGGACGTGA AACTGGGAGC 240  
 CTATAGTGGG AATACCCAGG AAGTCACCTT CGAGCCAGGC GAATACATCA CAAAAGCTTT 300  
 TGTGCGCTTC CAAGCTTTCC TCCGGGTATG GGTATGTAC ACCAGCAAGG ACCGCTATT 360  
 CTATTTTGGG AAGCTTGATG GCCAGATCTC CTCTGCCTAC CCCAGCCAAG AGGGGCAGGT 420  
 55 GCTGGTGGGC ATCTATGGCC AGTATCAACT CCTTGGCATC AAGAGCAATG GCTTTGAATG 480  
 GAATATATCA CTAGAGGAGC CGACCATGTA GCCACCAATT AATCTCACAT ACTCAGCAAA 540  
 CTCACCCCTG GGTGCTAGG GTGGGGTATG GGGCCATCG AGCTGAGGCC ATCTGTGTGG 600  
 TGGTGGCTGA TGGTACTGGA GTAACGTAGT CGGGACGCTG AATCTGAATC CACCAATAAA 660  
 TAAAGCTTCT GCAGATCTAG TGAATAAAAA A

60 SEQ ID NO:96 PEG4 Protein sequence  
 Protein Accession #: FGENSEH predicted

65 1 11 21 31 41 51  
 | | | | |  
 MLLLLTLALL GGPTWAGKMY GPGGGKYPST TEDYDHEITG LRVSVGLLLV KSVQVKLGDS 60  
 WDVKLGAALG NTQEVTLQPG EYITKVFVAF QAPLRGMVY TSKDRYFYFG KLDGQISSAY 120  
 PSQEGQVLVG IYQYQLLGI KSIGFENYF LEEPTTEPVV NLTYSANSPV GR

## SEQ ID NO:97 PEL9 DNA SEQUENCE

Nucleic Acid Accession #: NM\_006953  
 Coding sequence: 33-896 (underlined sequences correspond to start and stop codons)

70 1 11 21 31 41 51  
 | | | | |  
 75 CCGTCCCGCG CTCTGGCGGC TCCTCCCGGG CGATGCCTCC GCTCTGGGCC CTGCTGGCCC 60  
 TCGGCTCGCT GGGGTTGGGC TCGGCTGTGA ACCTGCAGCC CCAACTGGCC AGTGTGACTT 120  
 TCGCCACCAA CAACCCACACA CTTACCACTG TGGCCTTGA AAGCCCTCTC TGCAATGTTG 180  
 ACAGCAAGA GCGCTCACT GGCACCCAG AGGTCTACCT GTATGTCTCT GTGCACTCAG 240  
 80 CCATTTCAG GAATGCCTCA GTGCAAGACA GCACCAACAC CCCACTGGGC TCAACGTTCC 300

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10  
15

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TACAAACAGA GGGTGGGAGG ACAGGTCCCT ACAAAGCTGT GGCCTTTGAC CTGATCCCOCT 360
GCAGTGACCT GCCCAGCCTG GATGCCATG GGGATGTGTC CAAGGCCCTCA CAGATCCTGA 420
ATGCTTACCT GGTACAGGTG GGTGCCAAGC GGACCTGCCT GTGGGATCCC AACTTCCAGG 480
GCCTCTGTAA CGCACCCCTG TCGGCAGCCA CGGACTACAG GTTCAAGTAT GTCTGGGTCA 540
ATATGTCCAC GGGCTTGGTA GAGGACCAGA CCTGTGTGTC GGACCCCATC CGCACCAACC 600
AGCTCACCCC ATACTCGACG ATCGACACGT GGCCAGGCCG CGGGAGCGGA GGCATGATCG 660
TCATCACTTC CATCTGGGCT TCCTTCCCTT TCTTTTCTACT TGTGGGTTT GCTGGCGCCA 720
TTGCCCTCAG CCTCGTGGAC ATGGGGAGTT CTGATGGGGA AOCAGCTCAC GACTCCCAA 780
TCACTCAGGA GCCTGTTCOC AAGTGGCTGG GGGCTCGGA GTCTTCTTAC AGTCCGTGA 840
ACCGGGGGCC GCCACTGGAG AGGGCTGAGG TGTATTCCAG CAAGCTCCAA GACTGAGCCC 900
AGCACACCCC ATGGGCAGCA GCATCCTCCT CTCTGGCCTT GCCCAGGCC CTGCAGCGGT 960
GGTTGTACA CCCTGACTTC AGGGAAGGTG AAACAGGGCT TGTCCCTCCA ACTGCAGGAA 1020
AACCCCTAAT AAAATCTTCT GATGAGTTCT AAAAAAAA

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SEQ ID NO:98 PEN1 Protein sequence  
Protein Accession #: NP\_008884

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1 11 21 31 41 51
MPPLNALLAL GCLRFGSAVN LQPQLASVTF ATNNPFLTV ALEKPLCMFD SKREALTGTHE 60
VYLTVLVDSA ISRNASVQDS TNYPLGSTPL QTEGGRTGPF KAVAFDLIPC SLDPLSLDAIG 120
DVSKASQLLN AYLVRVGANG TCLWDFNFGG LCNAPLSAAT EYRFKYVLVN MSTGLVEDQT 180
LWSDPIRTNQ LTPYSTIDTW PRRSGGMIV ITSILGSLPF FLVLGVPAGAI ALSLVDMGSS 240
DGETTHDSQI TQEAVPKSLG ASESSTSVN RGPPLDRAEV YSSKLQD

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SEQ ID NO:99 PEN1 DNA SEQUENCE

Nucleic Acid Accession #: NM\_012391  
Coding sequence: 416-1423 (underlined sequences correspond to start and stop codons)

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1 11 21 31 41 51
GTCTGACTTC CTCCAGCAC ATTCTGCAC TCTGCCGTGT CCACACTGCC CCACAGACCC 60
AGTCTCTCAA GCTTCTGCC AGCTCCTTGC AAGCCCTTCA GGTGGGCCCT TGCCACGGTG 120
CCAGCAGGCA GCCCTGGGCT GGGGGTAGGG GACTCCCTAC AGGCACGCAG CCTGAGACC 180
TCAGAGGGCC ACCCCTTGAG GGTGGCCAGG CCCCAGTGG CCAACCTGAG TGCTGCCCTCT 240
GCCACACGCC CTGCTGGCCC TCGTTCCGCG TGCCCCCACA GATGCTGGC TGAGACACGC 300
CAGTGGCCTC AGCTGCCAC ACCTCTTCCC GGCCCTGAA GTTGGCACTG CAGCAGACAG 360
CTCCCTGGGC ACCAGGCAGC TAACAGACAC AGCCGCCAGC CCAACAGCAG CGGGCATGGG 420
CAGCCGCAGC CCGGGTCTGA GCAGCGTATC CCCCAGCCAC CTCTGCTGCT CCCCAGACAG 480
GGTGTCCGGG ACAGGCTTGG AGAAGGCCGC AGCGGGGGCA GTGGGTCTCG AGAGACGGGA 540
CTGGAGTCCC AGTCCACCGG CCACGCCCGA GCAGGGCCTG TCCGCTTCTT ACCTCTCCTA 600
CTTTGACATG CTGTACCTTG AGGACAGCAG CTGGGCAGCC AAGGCCCTTG GGGCCAGCAG 660
TCGGGAGGAG CCACCTGAGG AGCCTGAGCA GTGCCCGGTC ATTGACAGCG AAGCCCCAGC 720
GGCAGGCTG GACTTGTGTC CCGGCGGGCT GACCTTGGAG GAGCACTGCC TGGAGCAGGT 780
GCAGTCCATG GTGGTGGGGG AAGTGTCTAA GGACATCGAG ACGGCTTGCA AGCTGCTCAA 840
CATCACCCGA GATCCCATGG ACTGGAGCCC CAGCAATGTG CAGAAGTGGC TCCTGTGGAC 900
AGAGACCAA TACCGGCTGC CCCCATGGG CAAGGCCTTC CAGGAGCTGG CGGGCAGGGA 960
GCTGTGCGCC ATGTGCGGAG AGCAGTTCGG CCAGCGCTCG CCGCTGGGTG GGGATGTGCT 1020
GCACGCCCAC CTGGACATCT GGAAGTCAGC GGCCTGGATG AAGAGCGGA CTTCACCTGG 1080
GGCGATTACG TACTGTGCC CTACCACTGA GGAGAGCTGG ACCGACAGCG AGGTGGACTC 1140
ATCATGTCTC GGGCAGCCCA TCCACCTGTG CGAGTTCTCT AAGGAGTTCG TACTCAAGCC 1200
CCACAGCTCA GCGCGCTTCA TTAGGTGGCT CAACAAGGAG AAGGGCATCT TCAAAATTGA 1260
GGACTCAGCC CAGGTGGGCC GGCTGTGGGG CATCCGCAAG AACCGTCCCG CCATGAACCTA 1320
CGACAAGCTG AGCCGCTCCA TCCGCCAGTA TTACAAGAAG GGCATCATCC GGAAGCCAGA 1380
CATCTCCAGC CGCCTCGTCT ACCAGTTCCT GCACCCCATC TEAGTGCTCT GCCCAGGGCC 1440
TGAAACCCGC CTTAGGGGG CTCTCTCCTG CTTGCCCTGC CTCAGCCAGG CCTTGAGATG 1500
GGGGAACAG GGCAGTCTGC TCTGCTGCTC TGACCTTCCA GAGCCCAAGG TCAGGGAGGG 1560
GCAACCAACT GCCCCAGGGG GATATGGGTC CTCTGGGGCC TTCCGGGACA TGGGGCAGGG 1620
GTGCTTCTCT CTCAGGCCCA GCTGCTTCCC TGGAGGACAG AGGGAGACAG GGCTGCTCCC 1680
CAACACCTGC CTCTGACCCC AGCATTTCCA GAGCAGAGCC TACAGAAGGG CAGTGACTCG 1740
ACAAAGGCCA CAGGCAGTCC AGGCCCTCTCT CTGCTCCATC CCGCTGCTCT CCATCTCTCA 1800
CCACACCTGG CATGGTGCAG GGAGACATCT GCACCCCTGA GTTGGGCAGC CAGGAGTGCC 1860
CCCGGAATG GATAATAAAG ATACTAGAGA ACTG

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SEQ ID NO:100 PEN1 Protein sequence  
Protein Accession #: NP\_036523

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75

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1 11 21 31 41 51
MGSASPLGSS VSPSHLLLP DTVSRTGLEK AAAGAVGLER RDWSPSPPAT FEQGLSAPYL 60
SYFDMLYPED SSWAAKAPGA SSREPFPEEP EQCPVIDSQA FAGSLDLVPG GLTLEHSLE 120
QVQSMVQGEV LKDIETACKL LNIITADPMW SPENVQKWLW WTEHQYRLFP MGKAFQELAG 180
KELCAMSEDO FRQRPFLGGD VLHAHLDIWK SAAMWKERTS PGAIHYCAST SEESWTDSEV 240
DSSCSGQPIH LWQPLKRLLL KPHSYGRFIR WLNRKGIKIF IEDSAQVARL WGIRKNRPAM 300
NYDKLSRSIR QYYKGLIIRK PDISQRLVYQ FVHPI

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SEQ ID NO:101 PEN3 DNA SEQUENCE

Nucleic Acid Accession #: NM\_000742  
Coding sequence: 555-2144 (underlined sequences correspond to start and stop codons)

80



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1      11      21      31      41      51
|      |      |      |      |      |
GAGAGAACAG CGTGAGCCTG TGTGCTTGTG TGCTGAGCCC TCATCCCCCTC CTGGGGCCAG 60
GCTTGGGTTT CACCTGCAGA ATCGCTTGTG CTGGGCTGCC TGGGCTGTCC TCAGTGGCAC 120
5 CTGCATGAAG CCGTTCCTGGC TGCCAGAGCT GGACAGCCCC AGGAAAACCC ACCTCTCTGC 180
AGAGCTTGCC CAGCTGTCCC CGGGAAGCCA AATGCTCTCT ATGTAAGTCT TCTGCTCGAC 240
GGGGTGTCTC CTAAACCCCTC ACTCTTCAGC CTCTGTTTGA CCATGAAATG AAGTGACTGA 300
GCTCTATTCT CTACCTGCCA CTCTATTCTT GGGGTGACTT TTGTGAGCTG CCCAGAATCT 360
CCAAGCCAGG CTGGTTCCTCT GCATCCTTTC AATGACCTGT TTTCTCTCTT AACCACAGGT 420
10 TCGTGTGTGA GAGGAAGCCT CGCAGAATCC AGCAGAATCC TCACAGAATC CAGCAGCAGC 480
TCTGTGGGGG ACATGGTCCA TGGTGCAACC CACAGCAAAG CCTGACCTG ACCTCTGAT 540
GCTCAGGAGA AGCCATGGGC CCCTCTGTCT CTGTGTTCTT GTCTCTCACA AAGCTCAGCC 600
TGTGTGGGCT CCTTCTGACC CCAGCAGGTG GAGAGGAAGC TAAGCGGCCA CCTCCAGGG 660
CTCTGGGAGA CCACTCTCC TCTCCAGTTC CCACGGCATT GCCGACGGGA GGCTCGCATA 720
15 CGAGACTGA GGACCGGCTC TTCAACACC TCTTCCGGGG CTACAACGCG TGGCGCGGCC 780
CGGTGCCCAA CACTTCAGAC GTGTGTGATT TGGCTTTTGG ACTGTCCATC GCTCAGCTCA 840
TCGATGTGGA TGAGAAGAAC CAATATGATG CCACCAACGT CTGGCTAAAA CAGGAGTGA 900
GGGACTACAA ACTGCGCTGG AACCCGCTG ATTTTGGCAA CATCACATCT CTCAGGTTCC 960
CTTCTGAGAT GATCTGATC CCCGACATTC TTCTCTACAA CAATGCAGAT GGGGAGTTTG 1020
20 CAGTGACCCA CATGACCAAG GCCCACTCTT TCTCCAGGG CACTGTGCAC TGGGTGCCCC 1080
CGGCCACTTA CAAGAGCTCC TGCAAGCTGC AGCTCACTTT CTTCCTCTTC GACCAGCAGA 1140
ACTGCAAGAT GAAGTTTGGC TCCTGGACTT ATGACAAGGC CAAGATCGAC CTGGAGCAGA 1200
TGGAGCAGCT TGGGAGCCTG AAGGACTACT GGGAGAGCGG CGAGTGGGCC ATCGTCAATG 1260
CCACGGGCAC CTACAACAGC AAGAAGTAGC ACTGCTGGCC CGAGATCTAC CCGCAGCTCA 1320
25 CCTAGGCTTT GGTCACTCCG GGGTGGCCGC TCTTCTACAC CATCAACCTC ATCATCCCTC 1380
GCCTGCTCAT CTCTGCTCTC ACTGTGCTGG TCTTCTACTT GCCCTCCGAC TGGCGCGAGA 1440
AGATCAGGCT GTGCTATTTC GTGCTGCTGT CACTCACGCT CTTCCTGCTG CTCACTACTG 1500
AGATCATCCC GTCCACTCTG CTGCTCATCC CGCTCATCGG CGAGTACCTG CTGTTACCCA 1560
TGATCTCTGT CACCTGTGCC ATGCTCATCA CCGTCTCTGT GCTCAATGTG CACCACCGCT 1620
30 CCCCAGCAGC CCACACATG CCCCCTGGGG TGGCGGGGGC CCTTCTGGGC TGTGTGCCCC 1680
GGTGGCTTCT GATGAACCGG CCCCACCCAC CCGTGGAGCT CTGCCACCCC CTACGCCCTGA 1740
AGCTCAGCCC CTCTTATCAC TGGCTGGAGA GCAACGTGGA TGGCGAGGAG AGGGAGGTGG 1800
TGGTGGAGGA GGAGGACAGA TGGGCATGTG CAGGTCAATG GGGCCCCCTCT GTGGGCACCC 1860
35 TCTGACGCCA CGGCCACCTG CACTCTGGGG CCTCAGGTCC CAAGGCTGAG GCTCTGTCTG 1920
AGGAGCGTGA GCTGCTGCTA TCACCCACA TGCAGAAGGC ACTGGAAGGT GTGCACTACA 1980
TTGCCGACCA CCGCGGCTCT GAGGATGCTG ACTCTTCGGT GAAGGAGGAC TGGAAATATG 2040
TTGCCATGGT CATGACAGG ATCTTCTCTT GGCTGTTTAT CATGCTCTGC TTCTTGGGGA 2100
CATATGGGCT CTCTCTGCTT CCGTTCCTAG CTGGAATGAT CTGACTGCAC CTCCCTCGAG 2160
40 CTGGCTCCCA GGGCAAAGGG GAGGCTTCTT GGATGTGGAA GGGCTTTGAA CAATGTTTGA 2220
ATTGTAGAGT GAGCCCAAGG TGCCAGGGAG AACAGCCAGG TGAGGTGGGA GGTGGAGAG 2280
CCAGGTGAGG TCTCTCTAAG TCAGGCTGGG GTTGAAGTTT GGAGTCTGTG CGAGTTTGCA 2340
GGGTGAGGCA GGCCTGCACC TGATGTGGAG GTACAGGCAG ATCTTCCCTA CCGGGGAGGG 2400
CGGGAGGACA GGCCTGCACC TGATGTGGAG GTACAGGCAG ATCTTCCCTA CCGGGGAGGG 2460
45 ATGGATGGTT GGATACAGGT GGCTGGGCTA TTCCATCCAT CTGGAAGCAC ATTTGAGGCT 2520
CCAGGCTTCT CTTTGACGTC ATTCCTCTCC TTCTTGTCTG CAAAATGGCT CTGACCCAGC 2580
CGGCCCCCAG GAGGTCTGGG AGAGCTGAGA GCCATGGGCT GCAGGGGCTC CATATGTCCC 2640
TACGCTGCA GCAGGCAAAC AAGA

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SEQ ID NO:102 PENS Protein sequence

Protein Accession #: NP\_000733

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1      11      21      31      41      51
|      |      |      |      |      |
MGFSPCVFLS FTKLSLWMLL LTPAGGEEK RPPPRAPGDP LSSPSPTALP QGGSHTETED 60
55 RLPKHLFRGY NRKARVPFNT SDVIVIRFGL SIAQLIDVDE KNQMTTNVM LKQWSDYKL 120
RWNPADPQNI TSLRVPSEMI WIPDIVLYNN ADGEPAVTEH TKAHLFSTGT VHWVPPAIYK 180
SSCSIDVTFP PFDQNCNKK PGSWTYDKAK IDLEQMBQTV DLKDYWESGE WAIVNATGTY 240
NSRKYDCACE IYFDVITYAFV IRLPLFPYTI NLIIPCLLIS CLTVLVFVYLP SDCEKITLCL 300
ISVLLSLTVF LLLITETIIPS TSLVIFLIGE YLLFTMIPVT LSIIVTVFVL NVHRSPTSTH 360
60 TMFHWVRGAL LGCVPRLWLL NRPPFPVELC HPLRLKLSFS YHWLESNVDA EREVVVVEEE 420
DRKACAGHVA PSVGTLCSEH RLHSGASGFK AEALLQEGEL LLSFHMOKAL EGVHYIADHL 480
RSEDADSSVK EDWKYVAMVI DRIFLWLFII VCLFTGTGLF LPPFLAGMI

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SEQ ID NO:103 PEU4 DNA SEQUENCE

Nucleic Acid Accession #: NM\_018670

Coding sequence: 87-893 (underlined sequences correspond to start and stop codons)

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1      11      21      31      41      51
|      |      |      |      |      |
CAGGAGGCTG GAAGGGGCCA CTTCACACTT CGGGCTCGGC ATAAAGCGGC CGCCGGCCGC 60
CGGCCCCCAG AGCGCCCGCC GCTGCCATGG CCAGCCCTCT GTGCCCGCGG CTCTCCGAGT 120
CCTGGATGCT CTCTCGCGGC TGGGGCCCAA CTCGGCGGCC GCGGCCCTCC GACAAGGACT 180
GGCGCGGCTC CCTGCTCTCG TCCCAGACT CMTGGGCGAG CACCCAGGCC GACAGCCCCG 240
75 TGGCGAGCCC CGCGCGGCCA GGCACCTCTC GGGACCCCGG GCGCCCTCTC GTAGGTAGGC 300
GGCGCGCGCG CAGCAGCGCG CTGGGACAGG GGCAGAGCCA GAGCGCCAGT GAGCGGAGGA 360
AACTGCGCAT GCGCAGCGTG GCCCGCGCCC TGCACGAGCT GCGCGGCTTT CTACCGCGCT 420
CCGTGGCGCC CGCGGGCCAG AGCCTGACCA AGATCGAGAC GCTGCGCTTG GCTATCCGCT 480
ATATGCGCCA CTGTGCGGCC GTGCTAGGCC TCAGCGAGGA GAGTCTCCAG CCGCGGTGCC 540
GGCAGCGCGG TGACGCGGGG TCCCTCGGGG GCTGCCGCTG GTGCCCGGAC GACTGCCCGG 600
80 CGCAGATGCA GACACGGAGC CAGGCTGAGG GGCAGGGCCA GGGGCGCGGG CTGGGCTGCG 660

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TATCCGCGGT CGCGCGCGG GCGTCTGGG GATCCCCGC TGCGTGCCTC GGAGCCCGAG 720  
CTGCACCCGA GCCCGCGGAC CCGCTCGCGC TGTTCCGCGA GCGGCGCTGC CCGGAAGGGC 780  
AGGCGATGGA GCCAAGCCCA CCGTCCCGC TCCTTCCGGG CGACGTGCTG GCTCTGTTGG 840  
AGACCTGGAT GCCCTCTCG CCGTCTGGAGT GGCTGCCTGA GGAGCCCAAG TGACAAGGGA 900  
CAACTGACGC CGTCTCTGTG AGCACCGAGG CTTTCTGGCC TCACACCTTT CGAAGTGGTT 960  
CCTTGGCAGA CTGCGTTTCC TGGAGAGAGG CACGGGCGAT CCGGACGGGG GCATTCCTGC 1020  
GGGTGAGAGC CGTCCCGACC GCGGCGGCCC TTCTCAGCCC CTCCCTCCAT GGAGGGACCC 1080  
ATAGGGCTAG ACACCTTGGT GCAAGCAGGA GCGTCTGCTT AATGTGAATT TATTTATTTC 1140  
TGAATAAACT GTACTGGTGT CAAAAA AAAA A A

SEQ ID NO:104 PEU4 Protein sequence  
Protein Accession #: NP\_061140

15  
20  
1 11 21 31 41 51  
MAQPLCPPLS ESWMLSAAMG PTRRPPSPDK DCGRLVSSP DSWGSTPADS FVASPARPGT 60  
LRDPRAPFVG RRGARSSRLG SGQRQSASER EKLRRMTLAR ALHELRRFLP FSVAPAGQSL 120  
TRKETRLRLAI RYTGHLASVL GLSEESLQRR CRQRGDAGSP RGCPLEDDC PAQMTRTQA 180  
RGQQQGRGLG LVSARVAGAS WGSPPACPGA RAAPEPRDFP ALFABAACPE GQAMEPSPPS 240  
PLLPGLVLLAL LETWMLPLSL EWLPEEPK

## SEQ ID NO:105 PEU5 DNA SEQUENCE

Nucleic Acid Accession #: NM\_017636

Coding sequence: 324-3374 (underlined sequences correspond to start and stop codons)

25  
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1 11 21 31 41 51  
CCACGGAGAA GCCCACCAGT GCGTACGGAG AGCTGGACTT CACGGGGGCC GCGCGCAAGC 60  
ACAGCAATTT CCTCGGGCTC TCTGACCGAA CGGATCCAGC TGCACTTTAT AGTCTGTTCA 120  
CAGGCACATG GGGCTTCCGT GCCCGAACC TGGTGGTGT AGTCTGGGG GATCGGGGG 180  
GCCCGCTCTC CCAGACCTGG CTGACAGACC TGCTGCGTGG TGGGCTGGTG CCGGCTGCC 240  
AGAGCACAGG AGCTTGAATT GTCACTGGGG GTCTGCACAC GGGCATCGGC CGGCATGTTG 300  
GTGTGGCTGT ACCGGACCAT CAGATGCCCA GCACTGGGGG CACCAAGGTG GTGGCATAG 360  
GTGTGGCCCC CTGGGGTGTG GTCCGGAATA GAGACACCTT CATCAACCCC AAGGGCTCGT 420  
TCCCTGCGAG GTACCGGTGG CGCGGTGACC CGGAGGACGG GGTCCAGTTT CCGCTGGACT 480  
ACAACACTCT GGGCTTCTTC CTGTTGGAGC ACGGCACACA CGGCTGCTTG GGGGGCGAGA 540  
ACCGCTTCCG CTTGGCGCTG GAGTCTTACA TCTCACAGCA GAAGACGGGC GTGGAGGGA 600  
CTGGAATTGA CATCTCTGTC CTGCTCTCC TGATTGATGG TGATGAGAAG ATGTTGACGC 660  
GAATAGAGAA CGCCACCCAG GCTCAGCTCC CATGTCTCCT CGTGGCTGGC TCAGGGGGAG 720  
CTGCGGACTG CTTGGCGGAG ACCCTGGAAG ACACCTGCGC CCCAGGGAGT GGGGGAGCCA 780  
GGCAAGCGCA AGCCCGAGAT CGAATCAGGC GTTCTTTTCC CAAAGGGGAC CTTGAGGTCC 840  
TGCAACCCCA GGTGGAGAGG ATTATGACCC GGAAGGAGCT CCTGACAGTC TATTCTTCTG 900  
AGGATGGGTG TGAGGAATTC GAGACCATAG TTTTGAAGGC CCTTGTGAAG GCCTGTGGGA 960  
GCTCGGAGAG CTGAGCTTAC CTGATGAGC TGGCTTTGGC TGTGGCTTGG AACCGCTGG 1020  
ACATTTGCCA GAGTGAATCT TTTCCGGGGG ACATCCAAAT GCGGTCTCTC CATCTCGAAG 1080  
CTTCCCTCAT GAGCGCCCTG CTGAATGACC GGCTCGAGTT CGTGGCTTGG CTCATTTCCC 1140  
ACGCGCTCAG CCGCGCCAC TTCTTGACCC CGATGCGCCT GGGCCAACTC TACAGCGCGG 1200  
CGCCCTCCAA CTGCTCTATC CGCAACCTTT TGGACACAGC GTCCACAGC GCAGGCACCA 1260  
AAGCCCGCAG CTTAAAGAGG GGAGCTGCGG AGCTCCGGCC CCCTGACGTG GGGCATGTGC 1320  
TGAGGATGCT GCTGGGGAGG ATGTGCGCGC CGAGGTACCC CTCGGGGGGC GCCTGGGACC 1380  
CTCACCCAGG CCAGGGCTTC GGGGAGAGCA TGTATCTGCT CTGGACAAAG GCCACCTCGC 1440  
CGCTCTGCTG GAGTGTCTGG CTGGGGCAGG CCCCTGGAG CGACCTGCTT CTTTGGGCAC 1500  
TGTGTCTGAA CAGGGCACAG ATGGCCATGT ACTTCTGGGA GATGGGTTC AATGCACTT 1560  
CCTCAGCTCT TGGGGCTGTG TTGCTGCTCC GGGTGTATGC ACGGCTGGAG CTTGACGCTG 1620  
AGGAGGCAGC ACGGAGGAAA GACCTGGCGT TCAAGTTTGA GGGGATGGGC GTTGACCTCT 1680  
TTGGCGAGTG CTATCGCAGC AGTGAGGTGA GGGCTGCGCG CCTCTCTCTC CGTCTGCTGC 1740  
CGCTCTGGGG GAGTGGCACT TGCTTCCAGC TGGCCATGCA AGCTGACGCC CGTGCTTCTT 1800  
TTGCCAGGA TGGGGTACAG TCTCTGCTGA CACAGAAGTG GTGGGAGAT ATGGCCAGCA 1860  
CTACACCCAT CTGGGCCCTG GTTCTGCGCT TCTTTTGGCC TCCACTCATC TACACCCGCC 1920  
TCATCACCTT CAGGAATCA GAAGAGGAGC CCACACGGGA GGAGCTAGAG TTTGACATGG 1980  
ATAGTGTCTT TAATGGGGAA GGGCTGTGCG GGACGGCGGA CCCAGCCGAG AAGACGCCGC 2040  
TGGGGGTCCC GCGCCAGTCC GGGCGTCCGG GTTGTGCGGG GGGCGCTGCG GGGGGCGGCC 2100  
GGTGCTTACG CCGCTGGTTC CACTTCTGGG GCGCGCCGGT GACCATCTTC ATGGGCAAG 2160  
TGCTCAGCTA CTTGCTGTTC TTGCTGCTTT TCTCGCGGGT GCTGCTGCTG GATTTCAGC 2220  
CGGCGCCGCC CCGCTCCCTG GAGCTGTGCG TCTATTCTG GCGTTTCAGC CTGCTGTGCG 2280  
AGGAACTGCG CCAGGGCCCTG AGCGGAGGCG GGGGAGCGCT CGCCAGCGGG GCGCCCGGGC 2340  
CTGGCCATGC CTCACTGAGC CAGCGCTGCG GCCTCTACCT CGCCGACAGC TGGAAACAGT 2400  
GCGACCTAGT GGTCTCTACC TGCTTCTTCC TGGGCGTGGG CTGCGGCTG ACCCGGGTT 2460  
TGTACCACTT GGGCCGCACT GTCTCTTCCA TCGACTTCAT GGTTTTCAGC GTGCGGCTGC 2520  
TTCACATCTT CAGGCTCAAC ARACAGCTGG GGGCCAAAGT CGTCATCGTG AGCAAGATGA 2580  
TGAAGGAGCT GTTCTTCTTC CTCTTCTTCC TCGGCGTGTG GCTGGTAGCC TATGGCGTGG 2640  
CCACGGAGGG GCTCTGAGG CCACGGGACA GTGACTTCCC AAGTATCTCT CGCCGCTCT 2700  
TCTACCTGCC CTACCTGAGC ATCTTGGGCG AGATTCCCA GGAGGACATG GACGTGGCCC 2760  
TCATGAGACA CAGCAATGCG TCGTGGAGC CCGGCTTCTG GGCACACCTT CTTGGGGCCC 2820  
AGGCGGGCAC CTGCGTCTCC CAGTATGCCA ACTGCTGCTG GGTGCTGCTC CTGCTCATCT 2880  
TCTGCTCTGT GGGCAACATC CTGCTGTGTA ACTTGTCTAT TGCCATGTTT AGTTACACAT 2940  
TCGGCAAACT ACAGGGCAAC AGCGATCTCT ACTGGAAGCG GCAGCGTTAC CGCTCATATC 3000  
GGGAATTCCT CTTGCGGCC GCGCTGGCCC CGCCCTTTAT CGTCATCTCC CACTTGCCTG 3060  
TCTGCTCAG GCAATTTGTC AGGCGACCCC GGAGCGCCCA CGGCTCTTCC CCGGCCCTCG 3120  
AGCATTTCCG GGTTTACCTT TCTAAGGAAG CCGAGCGGAA GCTGCTAACG TGGGAATCG 3180

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TGCATAAGGA GAACCTTCTG CTGGCAGCG CTAGGGACAA GCGGGAGAGC GACTCCGAGC 3240  
 GTCTGGAGCG CAGCTGCCAG AAGGTGGACT TGGCACTGAA ACAGCTGGGA CACATCCGGC 3300  
 AGTACGAACA GCGCCTGAAA GTGCTGGAGC GGGAGGTCCA GCAGTGTAGC CGCGTCTCTG 3360  
 GGTGGGTGAC GTAGGCGGTT AGCAGCTCTG CATATGTGCC CTCAGGTGGG CCGCCACCCC 3420  
 TTGACCTGCA TGGGTCCAAA GAGTGAGCCA TGCTGGCGGA TTTTAAGGAG AAGCCCCAC 3480  
 AGGGGATTTT GCTCTTAGAG TAAGGCTCAT GTGGGCTCG GCGCCCGCAC CTGTGGGCT 3540  
 TGTCTCTGAG GTAGAGCCCC TGTCCATCTG GGCCTACTGC AGGACCACCT TTGGGAGTGT 3600  
 CATCTTTACA AACCACAGCA TGCCCGGCTC CTCCAGAAC CAGTCCCAGC CTGGGAGGAT 3660  
 CAAGGCTCGG ATCCCGGGCC GTTATCCATC TGGAGGCTCG AGGCTCCTTG GGTAAACAGG 3720  
 GACCACAGAC CCTCACCCAC TCACAGATTC CTCACACTGG GGAATAAAG CCATTTCAGA 3780  
 GGAATAAAG AAAAAAATA AAAAAAATA

## SEQ ID NO:106 PEU5 Protein sequence

Protein Accession #: NP\_060106

15  
20  
25  
30  
35

1 11 21 31 41 51  
 MASTGGTKVV AMGVAPWGVV RNRDTLINPK GSPPARYRMR GDPEDGVQFP LDYINYSAPFL 60  
 VDDTGTGCLG GNRFRRLRL SYISQKQTKV GGTGIDIPVL LLLIDGDEKM LTRIENATQA 120  
 QLPCLVAGS GGAADCLAEI LEDTLAPGSG GARQGEARDR IRRFFPKDL EVLQAQVERI 180  
 MTRKELLTVY SSEDGSEEPF TIVLKALVKA CGSSEASAYL DELRLAVAMN RVDIAQSELF 240  
 RGDIQMRSFH LEASLDALL NDRPEFVRLI ISEGLSLGHP LTFMRLAQLY SAAPSNLIR 300  
 NLLDQASHSA GTKAPALKGG AAELEPPDVG HVLRLMLGKH CAPRYPSGGA WDPHFGQFG 360  
 ESHYLLSDKA TSPLSLDAGL GQAFWSDLL WALLLNRAQM AMYFWEMGSN AVSSALGACL 420  
 LLRVMARLEP DAEBAARRKD LAFKPEGMGV DLFGEYRYS EVRAARLLR RCPLWGDATC 480  
 LQLAMQADAR AFAQDGVQS LLTKWMDM ASTTPIWALV LAFPCPLIY TRLITPRKSE 540  
 EEPFRELEEF DMDSVINGEG PVGTADPAEK TPLGVPRQSG RPGCCGRCG GRCLRWPH 600  
 FWAAPVTIFM GNVSVYLLFL LLFSRVLLVD FQAPPPGSL LLYFWAFTL LCEELRQGLS 660  
 GCGGSLASG PGPHASLSQ RLRLYLADSW NQCDLVALTC FLLGVGCLRT PGLYHLGRIV 720  
 LCIDPFVFTV RLLEHPTVVK QLGPKIVIS KMRKDVFFFL FFLGVMLVAY GVATEGLLRP 780  
 RDSFPYSILR RVFPRPYLQI FGQIPQEDMD VALMEHSNCS SEPFWARPP GAQAGTCVQS 840  
 YANLVVLLI VIFLNVAMIL LVNLLIAMFS YTFGVQGNIS DLYWKAQRYR LIREFHSRPA 900  
 LAPFPVISH LRLLRLQLCR RFRSPQSSP ALHPRVYLS KRAERKLLTW ESVEKENPFL 960  
 ARARDKRES SERLERTSQK VDLALKQLGH IREYEQRLKV LEREVQCSR VLGMVT

## SEQ ID NO:107 PEW3 DNA SEQUENCE

Nucleic Acid Accession #: NM\_005982

Coding sequence: 276-1130 (underlined sequences correspond to start and stop codons)

40  
45  
50  
55  
60  
65

1 11 21 31 41 51  
 GGTAGCAGCA TCCACCGGCG GGGAGGTCCG AGGCAGCAAG GCCTTAAAGG CTACTGAGTG 60  
 CGCGGCGGCT TCCTGTCTCA GAACCTCCCC TACTCTCCG CCTTCTCTTC CTGGCCGCGC 120  
 CACCGCCAAAG TTCCGACTCC GGTTTTCGCC TTTCGAAAGC CTAAGGAGGA GGTTAGGAAC 180  
 AGCGGCGGCC CCTCTCCCTG GCGCCGCGCC CCTTGCTCTT CGGCTCTGCT CCTGCGCGG 240  
 TGGCGCTGCG CCGTGCAGCC CGGCAGGCGC CAGCCATGTC GATGCTGCGG TCGTTTGGCT 300  
 TTACGAGAGA GCAAGTGGCG TGCGTGTGCG AGGTCTCTGCA GCAAGGCGGA AACCTGGAGC 360  
 GCCTGGGCGG GTTCTGTGCG TCACCTGCCG CCTGCGACCA CTGCGACAAG AACGAGAGCG 420  
 TACTCAAGGC CAAGGCGGTG GTGCGCTTCC ACCGCGGCAA CTTCGCTGAG CTCTACAAGA 480  
 TCCTGAGAGC CCACCACTTC TGCGCTCACA ACCACCCCAA ACTGCAGCAA CTGTGGCTGA 540  
 AGGGGATATTA CGTGGAGGCC GAGAAGCTGC GCGGCGGACC CTTGGGCGCC GTGGGCAAT 600  
 ATCGGCTGCG CCGAAATATT CCACCTGCGC GCACCATCTG GACGCGCGAG GAGACCAGCT 660  
 ACTGCTTCAA GGAGAAGTCG AGGGGTGTCC TGCGGGAGTG GTACGCGCAC AATCCCTACC 720  
 CATGCGCGCG TGAGAAGCGG GAGCTGGCGG AGGCCACCGG CCTACCCACC ACCCAGGTCA 780  
 GCAACTGGTT TAAGAACCGG AGGCAAGAG ACCGGGCGCG GGAGGCCAAG GAAAGGGAGA 840  
 ACACCGAATA CAATAACTCC TCCTCCAAAC AGCAGAACCA ACTCTCTCTT CTGGAAGGGG 900  
 GCAAGCGGCT CATGTCCAGC TCAGAAGAGG AATCTCTACC TCCCAAGT CCAGACCAGA 960  
 ACTCGGCTCT TCTGCTGCGG GGCATATAGG GCCACGCCAG GAGCTCAAAC TATCTCTCTC 1020  
 CGGCTTAAAC AGCCTGCGAG CCCAGTCAGC GCTGCGAGAC CCAACAGCAT CAGCTCCAAG 1080  
 ACTCTCTGCT CGGCCCGCTC ACCTCCAGTC TGTGTGACTT GGGTCTCTAA GTGGGGAGGG 1140  
 ACTGGGCGCT CGAAGGATT CCTGGAGCAG CAACCACTGC AGCGACTAGG GACACTTGTA 1200  
 AATAGAAATC AGGAACATTT TTGCACTTG TTTCTGGAGT TGTTCGCGCA TAAAGGAATG 1260  
 GTGGAGCTTC ACCAATATCT TTTTAAAAAT CAAAACCAAC AGCGATCTCA AGCTTAATCT 1320  
 CCTCTCTCTT CCAACTCTTT CCACCTTTGC ATTTCTCTTC CCAATGCAGA GATCAGGG

## SEQ ID NO:108 PEW3 Protein sequence

Protein Accession #: NP\_005973

70  
75

1 11 21 31 41 51  
 MSMLPSFGPT QEQVACVCEV LQQGGLRLR GRFLWSLPAC DHLKKNESVL KAKAVVAFHR 60  
 GNFRLEYKIL ESHQSPFINH PKLQQLMLKA HYVEAEKLAG RPLGAVGKYR VRRKFLPLPT 120  
 IWDGETSYTC FKEKSRGLVR EWAHNPYPYS PREKRELAZA TGLTTQVSN WFKNRQRDR 180  
 AAEAKERENT ENNNSSSNKQ NQLSPLEGGK PLMSSSEEF SPFQSPDQNS VLLLQGNMGR 240  
 ARSSNYSLPG LTASQPSHGL QTHQHLQDS LLGLTSSLV DLGS

## SEQ ID NO:109 PFJ8 DNA SEQUENCE

Nucleic Acid Accession #: NM\_005068

Coding sequence: 57-2060 (underlined sequences correspond to start and stop codons)

80

1 11 21 31 41 51  
 GGGGCTCCGC GGGGCTGGAG CACGGCCGGG TCTAATATGC CCGGAGCCGA GCGCGATGA 60  
 5 AGGAGAAATC CAAGAATGCG GCCAAGACCA GGAGGGAGAA GGAATAATGGC GAGTTTACG 120  
 AGCTTGCCAA GCTGCTCCCG CTGCCGTCGG CCATCACTTC GCAGCTGGAC AAAGCGTCCA 180  
 TCATCCCGCT CACCACGAGC TACCTGAAGA TGCGGCGCGT CTTCGCCGAA GGTTTAGGAG 240  
 ACGCGTGGGG ACAGCCGAGC CGCGCCGGGC CCTTGGACGG CGTCGCCAAG GAGCTGGGAT 300  
 CGCACTTGTT GGTGAAGTTG GATGGATTGG TTTTGTGGT AGCATCTGAT GGCAAAATCA 360  
 10 TGTATATATC CGAGACCGCT TCTGTCAATT TAGGCTTATC CCAGGTGGAG CTCACGGCCA 420  
 ACAGTATTTA TGAATACATC CATCTTCTG ACCACGATGA GATGACCGCT GTCTCACGG 480  
 CCCACGACC GCTGCACCC CACCTGCTCC AAGAGTATGA GATAGAGAGG TCGTTCTTTC 540  
 TTCGAATGAA ATGTGTCCTG GCGAAAAGGA ACGCGGCGCT GACCTGCAGC GGATACAAGG 600  
 TCATCCACTG CAGTGGCTAC TTGAAGATCA GGCAGTATAT CCGTGACATG TCCCTGTACG 660  
 ACTCTGCTA CCAGATTGTG GGGCTGTGTG CCGTGGGCCA GTCGTGCCA CCAGTGCCA 720  
 15 TCACCGAGAT CAAGCTGTAC AGTAACATGT TCATGTTTCA GGCACGCTT GACCTGAAGC 780  
 TGATATTCCT GGATTCCAGG GTGACCGAGG TGAACGGTTA CGAGCCCGAG GACCTGATCG 840  
 AGAAGACCTT ATACCATCAC GTGCACGGCT GCGACGTGTT CCACCTCCGC TACGCACACC 900  
 ACCTCTGCTT GTTGAAGTGG CAGGTACCA CCAAGTACTA CCGGCTGCTG TCCAAGCGGG 960  
 GCGGCTGGGT GTGGGTGCGA AGCTACGCCA CCGTGTGTGA CAACAGCCGC TCGTCCCGGC 1020  
 20 CCCACTGCAT CGTAGTGTG AATTATGTAC TCACGGAGAT TGAATACAAG GAACTTCAGC 1080  
 TGTCTCTGGA GCAGGTGTCT ACTGCCAAGT CCCAGGACTC CTGGAGGACC GCCTTGTCTA 1140  
 CCTCACAAGA AACTAGGAAA TTAGTGAAAC CCAAAAATAC CAAGATGAAG ACAAGCTGA 1200  
 GAACAAACCC TTACCCGCCA CAGCAATACA GCTGTGTCCA AATGGACAAA CTGGAATGCG 1260  
 GCCAGCTCGG AAATGGAGA GGCAGTCCCG CTGCAAGCGC TGCTGTCTCT CCAGAACTGC 1320  
 25 AGCCCCAGT CAAGAGAGT GACCTTCTGT ACAAGCATC CTACAGCCTG CCTTCTCT 1380  
 ACCATTACGG ACACCTCCCT CTGGACTCTC ACGTCTTCAG CAGCAAAAAG CCAATGTTGC 1440  
 OGGCAAGTT CGGGCAGCCC CAAGGATCCC CTGTGAGGT GGCACGCTTT TTCTTGAGCA 1500  
 CACTGCCAGC CAGCGGTGAA TGCCAGTGGC ATTATGCCAA CCCCCTAGTG CCTAGCAGCT 1560  
 CGTCTCCAGC TAAATAATCT CCAGAGCCAC CGGCGAACAC TGCTAGGCAC AGCTCGGTGC 1620  
 30 CAAGCTACGA AGCGCCCGCC GCGCGGTGC GCAGGTTGCG CGAGGACACC CGCCCCCGA 1680  
 GCTTCCGAG CTGCGGCCAC TACCGCGAGG AGCCCGCGT GGGCCCGGCC AAAGCCCGCC 1740  
 GCCAGGCGC CGGGGACGGG GCGCGGCTGG CGCTGGGCCG CGCGGCACCC GAGTGCTGCG 1800  
 CGCCCCGAG CCGCGGCGCC CCGGGGCGCG CGGCGCAGCT GCGCTTCTGT CTGCTCAACT 1860  
 ACCACCGCGT GCTGCGCCGG CGCGGACCGC TGGGGGGCGC CGCACCCGCC GCTCCCGGCC 1920  
 35 TGCGCTCGC TCCCGGGGCG CCGGAGCGCG CGACCGGCGC GCTGCGGCTC CGGCACCCGA 1980  
 GCGCGCGCGC CACCTCCCGC CCGGCGCGCG CCTGCGGCCA CTACCTGGGC GCTCGGTCA 2040  
 TCATCAACAA CGGGAGGTGA CCGCTGGGCC GCGCGGCCA GGAACCTGGA CCGCGCTCC 2100  
 CGGGCTCGC GCGCGCACGA GCGCGGCAAA TGCGCACGAC CTACATTAAT TTATGCAGAG 2160  
 ACAGCTGTTT GAATTGGACC CCGCGGCCGA CTGCGGATT TCCACCGCGG AGGCCCGCGC 2220  
 40 CGCGGTGCG GAGGCGCGAG GAGCGCCCGG GTCGCGGCGG GTGACCGGCC GCTCTGTCTC 2280  
 TGCGAGGCGC GGTGCGACCC AGTGTCTGGG GGCTTGGTTT CCTACCTTG AAATCGGGCT 2340  
 TCACCGCTCT TGCTTGTCC CCAACGTTCC ACAACAGTCC CGCTGGGGGA TTGAAGCGGT 2400  
 TTACTCGGC AAATATCTC CACTTTCAGG AGGGAAAACC CACCTACCA CAGTCCGCTC 2460  
 TTCCAAGTGG ACGGCAGACC TGGGAGGGGA CGCTGTGTC ACGAGCCCTT TTAGATGCTT 2520  
 45 AGGTGAAGCG AGGAAGTATG ATTGTAAGTC CCATGAATAC ACAACTCCAC TGCTTTTAAA 2580  
 AGTCATCAA GAGTCTCAT ATTITGTTT TTATTAAACC CTITCTTCAA TACAAAAAGC 2640  
 CAACAAACCA AGACTAAGGG GTGACCATG CAATTCATT TTGTGTCTGT GAACATAGGT 2700  
 GTGCTTCCA AATACATTAA CAAGCTCTTA CTCCCGCTA ACCCTATGA ACTCTTGATA 2760  
 50 ACACCAAGAG TAGCATCTTC AGAATATATT GAATAGGCAT TAAATGCAAA AATATATATG 2820  
 TAGCCAGACA GTTATAGGA ATGACCTGT CAAGCTTCAT TATTACGTGG CAAAAATCCCT 2880  
 CTGCCCCACA CAGATCTGTA ATCACTAGG CTGCTGTTTG CTACAAATAG TGCTAATAAA 2940  
 GTTAAATTGC ACGTGAATA CGGAACACTG TCAATGGACT GCACCTTGTG AAGGAAAAAC 3000  
 ATGCTTAAGG GGGTGAATG AAAATGATGT AGACATTTTA AGCATTTTCT ACACAGCGAG 3060  
 AAAACTCTGT AAGAACATGT TACGTGTGCA ACAGGTAAC AGAAATCCTT TCATAAAGCA 3120  
 55 CCAGCAGTGT TAAAAAATG AGCTTCCATT AATTTTACT TTTTATGGGT TTTGCTTAAA 3180  
 GATCTCAACA TGGAAAAATC CTGTCAATGC TCTGAATGC ACAATGCATT GAACCGCCGT 3240  
 CCTTCAATT TCTTCACACT ATCAACACTG CAGCATTTTG CTGCTTATC AAAATGGTTT 3300  
 ATTTAGGAA ACTTTTCCA CCTTCTGAA TGGAAAGAGG TTTTCAAAA TGTTTTAAAC 3360  
 60 TCATGTTCT AAAATCAAGT GCACCTACAC CAATGCTCT CAAATGTGA ACTGACTTTT 3420  
 TTTTITTTT TTTTGCCAA CCGTGTGTC TTAGTGAGGA CCGTACACAA TCCCTACAGG 3480  
 GTGCTGTCA GTGGGCCCTA TGGTAAGAGT CACAATTTGC AAATTTAGGA CCGTGGGTCA 3540  
 TGCAGCGAAG GGGCTGGATG GTAGGAAGGG ATGTGCCCGC CTCTCCACGC ACTCAGCTAT 3600  
 ACCTCATICA CAGCTCCTTG TGAGTGTGTG CACAGGAAAT AAGCCGAGGG TATTATTTT 3660  
 65 TTATGTTTAT GAGTCTGTGA ATTAACCGT GATTCTTGA AGGTGTAGGT TTGATTACTA 3720  
 GGAGATACCA CCGACATTTT TCAATAAAGT ACTGCAAAAT GCTTTTGTG CTACCTTGT 3780  
 ATTAACTTT GGGGCTGTAT TTAGTAAAAA TAAATCAAGG CTATCGGAGC AGTTCAATAA 3840  
 CAAAGGTAC TGTGTAGAAA AAAGACCTA TCATAGATT ACAAG

SEQ ID NO:110 PFJ8 Protein sequence:  
 Protein Accession #: NP\_005060.1

1 11 21 31 41 51  
 MKEKSKNAK TRREKENGFE YELAKLLPLP SAITSQLDKA SIIRLTSSYL KMRAVFPQGL 60  
 GDAWGGPSRA GPLDGVAKEL GSHLLQTLTG FVFFVASDGL IMYISETASV HLGSLQVELT 120  
 GNSIYEIYHP SDHDEMTAVL TAHQPLHHHL LQYEIERSF FLRMKCVLAK RNAGLTCSGY 180  
 KVIHCSGYLK IRQYMLDMSL YDSCYQIVGL VAVGQSLPPS AITEIKLYSN MFMFRASLDL 240

KLIFLDSRVTV ETVGYEPQDL IEKTLVHHVH GCDVFLRYA HHLVLVKGQV TTKYRLLSK 300  
 RGGWVWVQSY ATVVHNSRSS RPHCVSVNY VLTEIEYKEL QLSLEQVSTA KSQDSWRTAL 360  
 STSQETRLKLV KPKNTKMKTK LRTNYPFPQ YSSFMKLE CGQLGNWRAS PPASAAAPPE 420  
 LQPHSESSDL LYTFSYSLPF SYHYGHFLD SHVFSKKPM LPAKFGQPGQ SPCEVARFFL 480  
 STLPAAGECQ WHYANPLVPS SSSPAKNPPE PPANTARHSL VPSYEAPAAA VRRFGEDTAP 540  
 PSFPCQGHYR EEPALGPAPA ARQAARDGAR LALARAPEEC CAPPTPEAPG APAQLPFVLL 600  
 NYHRVLARRG PLGGAAPAAAS GLACAPGGPE AATGALRLRH PSPAATSPPG APLPHYLGAAS 660  
 VIITNGR

## SEQ ID NO:111 PFJ7 DNA SEQUENCE

Nucleic Acid Accession #: NM\_006549

Coding sequence: 1-1254 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
 ATGAAGGAC GCTGCATCTG CCGTCCCTG CCTACTCAC CCGTCAGCTC CCGCAGTCC 60  
 TCGCCTCGGC TCGCCCGGCG GCGACAGTG GAGTCTCACC ACGTCTCCAT CACGGGTATG 120  
 CAGGACTGTG TGCAGCTGAA TCAGTATACC CTGAAGGATG AAATTGGAAA GGGCTCCTAT 180  
 GGTGTGCTCA AGTGGGCTCA CAATGAAAAT GACAATACCT ACTATGCAAT GAAGGTGCTG 240  
 TCCAAAAGA AGCTGATCCG GCAGGCCGGC TTCCACGTC GCGTCCACC CCGAGGCAAC 300  
 CCGCCAGCTC CTGGAGGCTG CATCCAGCCC AGGGGCCCCA TTGAGCAGGT GTACCAGGAA 360  
 ATTGCCATCC TCAAGAAGCT GGACACCCC AATGTGGTGA AGCTGGTGA GGTCTGGAT 420  
 GACCCCAATG AGGACCATCT GTACATGGTG TCGAACTGG TCAACCAAGG GCGGTGATG 480  
 GAAGTGCCCA CCTCAAAAC ACTCTCTGAA GACCAGGCC GTTTCTACTT CCAGGATCTG 540  
 ATCAAAGGCA TCGAGTACTT ACCTACCCAG AAGATCATCC ACCGTGACAT CAAACCTTCC 600  
 AACCTCTGG TCGGAGAAGA TGGGCACATC AAGATCGCTG ACTTGGTGT GAGCAATGAA 660  
 TTCAAGGCA GTGACGCGCT CTTCTCAAC ACCGTGGCA CCGCCGCTT CATGGCACCC 720  
 GAGTGGCTCT CTGAGACCCG CAAGATCTTC TCTGGGAAGG CCTTGGATGT TTGGGCGATG 780  
 GGTGTGACAC TACTCTGCTT TGTCTTGGC CAGTGGCCAT TCATGGACGA GCGGATCATG 840  
 TGTTTACACA TGAAGTACAA GAGTCAGGCC CTGGAATTTT CAGACCAAGC CGACATAGCT 900  
 GAGGACTTGA AGGACCTGAT CACCCGTATG CTGGACAAGA ACCCGAGTC GAGGATCGTG 960  
 GTGCCGAAA TCAAGTGA CAACCTGGTC ACGAGGCATG GGGCGGAGC GTTGCCTCG 1020  
 GAGGATGAGA ATGCGACGCT GGTGGAAGTG ACTGAAGAGG AGGTGAGAA CTCAGTCAA 1080  
 CACATGCCA GCTTGGCAAC CGTGATCCTG GTGAAGACCA TGATAGTAA ACGTCTCTT 1140  
 GGGAAACCAT TCGAGGCGAG CCGCGGGGAG GAACGCTCAC TGTACGCGC TGGAAACTTG 1200  
 CTCACCAAAA AACCAACCAG GGAATGTGAG TCCCTGTCTG AGCTCAAGAC CTAGAAAATA 1260  
 AGTCCCTTC CTGCTGTGT CAAAGTAACG TAAGAGTTCC CTCACCGAG TGGATGCAGA 1320  
 CGTCTCTGCT GTCAGCCACC TTCCTTCATA CACATAGCCA GCGCAGGCTG ACCAGAAGCT 1380  
 CCCAGGACAG ATGAGGCTTT GTGTCTTAT GAGAGTGGGA GAACCTGGTG GGCACCCCTG 1440  
 GTGCAGGTGC TGTGTGGTGT GGGGACCCCA CTGCTTTTCC CACTGAGCAC ATCATGGCTA 1500  
 CCTGACTTGG TGGGAGTTCC ATTCAGTCAC TTCTGTCTT TAAACATAGC TTTACTGAGG 1560  
 TACAATTAC ATACCATGA ATTCACCCAC GGAAGTGTA TGATTCAAGT GTTTCTAATA 1620  
 CACACTTCTG CAGCCATTAC CACCGTCAAC TTAGGACAT TTTATCAGC CCAAGAAGAC 1680  
 ACCCTACACT CCTAGCTGT CCGCATCAA CTCGCCACC CCAGTAACCA CTCAGAAATG 1740  
 GTATGGATTG GCCTTCTG GACGTTTCTG ATAAATGGCG TCATACATA AAAAAAAAAA 1800  
 AAAA

## SEQ ID NO:112 PFJ7 Protein sequence:

Protein Accession #: NP\_006540.1

1 11 21 31 41 51  
 MNGRCICPSL PYSVPSPQS SPRLPRRPTV ESHVVSITGM QDCVQLNQYT LKDEIGKGSY 60  
 GVVKLA YNEN DNTYYAMKVL SKKKLIRQAG FPRRPFRGT RPAFGGCIQ RGPQVYQ 120  
 IAILKKLDHP NVVKLVEVLD DPNEDHLYMV FELVNQGPVM EVPTLKPLSE DQARFYQDL 180  
 IKGIEYLHYQ KIHHRDIKPS NLLVGEDGHI KIADFGVSNF FKGSDALLSN TVGTAPFMAP 240  
 ESLSETRKIF SGKALDVWAM GVTLYCFVFG QCFMDERIM CLHSKIKSQA LEFPDQPDIA 300  
 EDLKDILTRM LDKNPESRIV VPEIKLHPVV TRHGAEPLPS EDENCTLVEV TEEEVNSVK 360  
 HIPSLATVIL VKTMIRKRSF GNPFEGRRE ERSLSAPGNL LTKKPTRECE SLSELKT

## SEQ ID NO:113 PFJ6 DNA SEQUENCE

Nucleic Acid Accession #: NM\_021810

Coding sequence: 1-429 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
 ATGAACCTC TGATATGGAC ATGGTCAGAT GTTGAAGGCC AGAGGCCGGC TCTGCTCATC 60  
 TGCACAGCTG CAGCAGGACC CAGCAGGGA GTTAAGGGTT ATGGCAAGCC CTTTGAGCCA 120  
 AGAAGTGTGA AAAACATACA CTCTACTCTT GCTTACCCAG ATGCCACAAT GCACAGACAA 180  
 CTCCTGGCTC CGGTGGAAAG AAGGATGGCA GAGACATTGA ATCAGAAACT CCATGTTGCC 240  
 AATGTGCTGG AAGATGACCC CGGCTACCTA CCTCAGCTCT ACAGCGAGGA AGGGGAGTGT 300  
 GGAGGGGCCC CATCCTCAG CTCTCTGGCC AGCTTGAAC AGGAGTTGCA ACCTGATTGT 360

CTGGACTCTT TGGGTTCAAA AGCGACTCCG TTGAGGAAA TATATTCAGA GTCAGGTGTT 420  
CCTTCCTAA

5 SEQ ID NO:114 PFJ6 Protein sequence:  
Protein Accession #: NP\_068582.1

1 11 21 31 41 51  
10 MKPLIWTWSD VEGORPALLI CTAAAGPTQG VKGYGKPFEP RSVKNIHSTP AYPDATMHRQ 60  
LLAPVEGRMA ETLNQKLHVA NVLEDDPGYL PHVYSEEGEC GGAPSLSSLA SLEQLQFDL 120  
LDSLGSKATP FEETYESGV PS

15 SEQ ID NO:115 PFJ5 DNA SEQUENCE

Nucleic Acid Accession #: NM\_006381  
Coding sequence: 131-985 (underlined sequences correspond to start and stop codons)

20 1 11 21 31 41 51  
CGAATGCAGG CGACTTGCGA GCTGGGAGCG ATTTAAACG CTTTGGATTC CCCC GGCCCTG 60  
GGTGGGGAGA GCGAGCTGGG TGCCCCCTAG ATTCCCGGCC CCGGCACCTC ATGAGCCGAC 120  
CCTCGGCTCC ATGGAGCCCG GCAATTATGC CACCTTGGAT GGAGCCAAAGG ATATCGAAAGG 180  
CTTGCTGGGA GCGGGAGGGG GGCGGAATCT GGTGCCCCAC TCCCCTCTGA CCAGCCACCC 240  
AGCGGCGCCT ACGCTGATGC CTGCTGTCAA CTATGCCCCC TTGGATCTGC CAGGCTCGGC 300  
GGAGCCGCCA AAGCAATGCC ACCATGCCC TGGGGTGCCC CAGGGGACGT CCCAGCTCC 360  
CGTCCCTTAT GGTTACTTTG GAGGCGGTA CTACTCTGC CGAGTGTCCC GGAGCTCGCT 420  
GAAACCCGTG GCCCAGGCAG CCACCTGGC CGCGTACCCC GCGGAGACTC CCACGGCCGG 480  
GGAAGAGTAC CCCAGTGCC CCACTGAGTT TGCCCTCTAT CCGGGATATC CGGGAACCTA 540  
CCACGCTATG GCCAGTTACC TGGACGTGTC TGTGGTGCG AGCTGCGGTG CTCCTGGAGA 600  
ACCGCGACAT GACTCCCTGT TGCCCTGTGA CAGTTACCAG TCTTGGGCTC TCGCTGGTGG 660  
CTGGAACAGC CAGATGTGTT GCCAGGGAGA ACAGAACCCA CCAGGTCCTT TTTGGAAGGC 720  
AGCATTTGCA GACTCCAGCG GGCAGCACCC TCTGACGCC TGCGCCCTTC GTCCGGGCCG 780  
CAAGAAACGC ATTCGTTACA GCAAGGGGCA GTTGGCGGAG CTGGAGCGGG AGTATGCGGC 840  
TAACAAGTTC ATACCAAGG ACAAGAGGCG CAAGATCTCG GCAGCCACCA GCCTCTCGGA 900  
GCGCCAGATT ACCATCTGGT TTCAGAACC CCGGTCAAA GAGAAGAAGG TTCTCGCAA 960  
GGTGAAGAAC AGCGCTACCC CTAAGAGAT CTCCTTGCT GGGTGGGAGG AGCGAAAGTG 1020  
GGGTGTCTCT GGGGAGACCA GAAACCTGCC AAGCCAGGC TGGGGCCAAG GACTCTGCTG 1080  
AGAGGCCCTC AGAGACAACA CCCTCCAG GCACTGGCT GCTGGACTGT TCTCAGGAG 1140  
CGGCTGGGT ACCAGTATG TGCAGGGAGA CGGAACCCCA TGTGACAGGC CCACTCCACC 1200  
AGGTTCCCA AAGAACCTGG CCCAGTCATA ATCATTATC CTCACAGTG CAATAATCAC 1260  
GATAACCAAT

45 SEQ ID NO:116 PFJ5 Protein sequence:  
Protein Accession #: NP\_068582.1

50 1 11 21 31 41 51  
MEPNYATLD GAKDIEGLG AGGGRNLVAH SFLTSHPAAP TLMPAVNYAP LDLPGSAEPP 60  
KQCHPCGPVP QGTSPAPVPY GYFGGGYYSR RVSRSLLKPC AQAATLAAYP AETPTAGEEY 120  
PSRPTAFAY PGYPGTYHAM ASYLDVSVVQ TLGAPGEPRH DSLLPVDYSQ SWALAGGWNS 180  
55 QMCCQGEQNP PGPFWKAAPA DSSGOHPPDA CAFRRGRKKR IPYKGLRE LEREYAANKF 240  
ITKDKRRKIS AATLSERQI TIWFQNRVK EKKVLAKVKN SATP

60 SEQ ID NO:117 PFJ4 DNA SEQUENCE

Nucleic Acid Accession #: NM\_005628  
Coding sequence: 591-2216 (underlined sequences correspond to start and stop codons)

65 1 11 21 31 41 51  
GTAACCGCTA CTCCCGGACA CCAGACCACC GCCTTCCGTA CACAGGGGCC CGCATCCAC 60  
CTCCCGGAC CTAAGAGCCT GGGTCCCCTG TTCCCGGAGG TCCGCTTCCC GGCCCCCAGA 120  
TTCTGCAATC CCAGCCCTCA GTGTCCAAGA CCCAGGCAGC CCGGGTCCCC GCCTCCCGGA 180  
TCCAGGCGTC CGGGATCTGC GCCACCAGAA CTAAGCCTCC TGCAGACCTC CGCATCTGG 240  
70 GGGCACTCAA CCTCTGGAG CCAAGGGGCC CACGTCCCAC CCAGAGAAAC TCTGTATT 300  
CCAGCTCTTA GGGCAAGGA ACCCGGGGCG TCCGAATCC CAGCTTCCG ACATCTGGCA 360  
CAGGGGCGAG AGCAGAGAA GTCAGGCGCC AGCCTGGGGA ATTTAAACAC TCCAGCTTCC 420  
AAGAGCCAAG GAACCTCAGT GCTGTGAAT CACAACCTA AGGAGCCCTC CAAAGTTCCA 480  
GTCTCCAGGT GCTGTACTC AACTCAGTCC TAGGAACGTC GGTCTCTGGG AAGAGCCCA 540  
75 AGCGCTCCCA CCGAGCTTCC AGCGCTAAG AAACCCCGGT GCTTCCCATC ATGGTGGCCG 600  
ATCTCTCTCG AGACTCCAAG GGGCTCGCAG CGGCGGAGCC CACCGCCAAC GGGGGCTCG 660  
CGCTGGCCTC CATCGAGGAG CAAGGCGCGG CAGCAGGCGG CTACTGCGGT TCCCGGAGCC 720  
AGGTGCGCGG CTGCTTCGA GCCAACCTGC TTGTGCTGCT GACAGTGGT GCCGTGGTGG 780  
CCGCGCTGGC GCTGGGACTG GGGGTGTCGG GGGCCGGGGG TGCCTGGCG TTGGGCCCGG 840

AGCGCTTGAG CGCCTTGTC TTCCGGGGCG AGCTGCTGCT GCGTCTGCTG CGGATGATCA 900  
 TCTTGCCGCT GGTGGTGTGC AGCTTGATCG GCGGCGCGCG CAGCCTGGAC CCGGGCGCGC 960  
 TCGGCGCTCT GGGCGCCTGG GCGCTGCTCT TTTCTCTGGT CACCACGCTG CTGGCGTGGG 1020  
 CGCTGGAGT GGGCTTGGCG CTGGCTCTGC AGCGGGGGCG CGCCTCGGCC GCCATCAACG 1080  
 5 CCTCCGTGGG AGCGCGGGCG AGTGCCGAAA ATGCCCCAG CAAGGAGGTG CTCGATTCTG 1140  
 TCCTGGATCT TGGAGAGAAAT ATCTCCCTT CCAACCTGGT GTCAGCAGCC TTTCGCTCAT 1200  
 ACTCTACCAC CTATGAAGAG AGGAATATCA CCGGAACGAG GGTGAAGGTG CCGTGGGGGC 1260  
 AGGAGGTGGA GGGAGTGAAC ATCTGGGCT TGGTAGTGT TGCATCGTC TTGGTGTGG 1320  
 10 CGCTGCGGAA GCTGGGGCT GAAGGGGAGC TGCTTATCCG CTCTTCAAC TCCTCAATG 1380  
 AGGCCACCAT GGTCTGCTG TCCTGGATCA TGTGTACGC CCTGTGGGC ATCATGTTCC 1440  
 TGTGGCTGG CAAGATCGTG GAGATGGAGG ATGTGGGTTT ACTCTTGGC CGCCTTGGCA 1500  
 AGTACATTCT GTCTGCTCG CTGGGTCAAG CCATCCATGG GCTCTGGTA CTGCCCTCA 1560  
 TCTACTTCT CTTCACCGC AAAAAACCCCT ACCGCTTCT GTGGGGCATC GTGACGCGC 1620  
 TGGCCACTGC CTTTGGGACC TCCTCAGTT CCGCCACGCT GCGCTGATG ATGAAGTGG 1680  
 15 TGAAGGAGAA TAATGGCGTG GCCAAGCACA TCAGCGTCTT CATCTGCCC ATCGGCGCA 1740  
 CCGTCAACAT GGACGCTGCC GCGCTCTTCC AGTGGGTGGC CGCAGTGTTC ATTGCACAGC 1800  
 TCAGCCAGCA GTCTTGGAC TTCGTAAGA TCATCACCAT CCTGGTCAAG GCCACAGCGT 1860  
 CCAGCGTGG GGCAGCGGGC ATCCCTGCTG GAGGTGTCT CACTCTGGCC ATCATCTCG 1920  
 AAGCAGTCAA CCCCCGGTC GACCATATCT CTTGTATCTT GGCTGTGGAC TGGCTAGTCG 1980  
 20 ACCGGTCTG TACGCTCTC AATGTAGAAG GTGACGCTCT GGGGGCAGGA CTCCTCCAAA 2040  
 ATTATGTGA CCGTACGGAG TCGAGAAGCA CAGAGCCTGA GTTGATACAA GTGAAGAGTG 2100  
 AGCTGCCCTT GGATCCGCTG CCAGTCCCA CTGAGGAAGG AAACCCCTC CTCAAACACT 2160  
 ATCGGGGGC CGCAGGGGAT GCCACGCTG CCTCTGAGAA GGAATCAGTC ATGTAACCC 2220  
 CGGAGGGGAC CTTCCCTGCC CTGCTGGGGT TGCTCTTGG AACTGTGATT ATGAGGAATG 2280  
 25 GATAAATGGA TGAGTACGG CTCTGGGGGT CTGCTGCAC ACTCTGGGA GCGAGGGGCC 2340  
 CCAGCACCTT CCAGGACAGG AGATCTGGGA TGCTGCTGCT CTGGAGTACA TGTGTTACA 2400  
 AGGGTACTC CTCAAAACCC CCAGTCTCA CTCATGTCCC CAACTCAAGG CTAGAAAACA 2460  
 GCAAGATGGA GAAATAATGT TCTGCTGCTG CCCCACGCT ACCTGCTGG CCTCCCTGT 2520  
 CTCAGGGAGC AGGTACAGG TCACCATGGG GAATCTAGC CCCCAGTGG GGGATGTTAC 2580  
 30 AACCCATGC TGGTATTTT GCGGCTGTA GTTGTGGGG GATGTGTGTG TGCACGTGTG 2640  
 TGTGTGTGTG TGTGTGTGTG TGTGTGTGTG TCTGTGACC TCCTGTCCC ATGTTACGTC 2700  
 CCAOCTGTC CCGAGATCCC CTATCCCTC CACAATAACA GAAACACTCC CAGGGACTCT 2760  
 GGGAGAGGC TGAGGACAAA TACCTGCTGT CACTCCAGAG GACATTTTT TTAGCAATAA 2820  
 AATTGAGTGT CAATATTTA AAAAAAAAAA AAAAAA

SEQ ID NO:118 PF14 Protein sequence  
 Protein Accession #: NP\_005618.1

40 1 11 21 31 41 51  
 MVADPPRDSK GLAAAEPTAN GGLALASIED QGAAAGGYCG SRDQVRRCLR ANLLVLLTVV 60  
 AVVAGVALGL GVSGAGGALA LGPERLSAFV FPGELLRLRL RMILPLVVC SLIGGAASLD 120  
 45 PGALGRLGAW ALLFFLVTL LASALGVGLA LALQGAASA AINASVGAAG SAENAPSKEV 180  
 LDSFLDLARN IFPSNLVSA FRSYSTTYEB RNITGTRVKV PVQGEVEGMN ILGLVVFVAV 240  
 FGVALRKLGP EGGLEIRFFN SFNEATMVLV SWIMWYAPVG IMFLVAGKIV EMEDVGLLEA 300  
 RLGYILCL LGRAIHGLLV LPLTYFLTR KNPYRFLWGI VTPLATAFGT SSSSATLPLM 360  
 MKKVEENNGV AKHSIRFLP IGATVNMDDA ALFCVAAVFI AQLSQSLD FVKITLVT 420  
 50 ATASSGAAAG IPAGGVTLA ILEAVNLPV DHISLILAVD WLVDRSCTVL NVEGDALGAG 480  
 LLQNYVDRTS SRSTPELIQ VKSELPLDPL PVPTEEGNPL LKHRYRGPAGD ATVASEKESV 540  
 M

55 SEQ ID NO:119 PFJ3 DNA SEQUENCE  
 Nucleic Acid Accession #: NM\_006708  
 Coding sequence: 88-642 (underlined sequences correspond to start and stop codons)

60 1 11 21 31 41 51  
 CTAAGTTAAGG CGGCACAGGG CCGAGGCGTA GTGTGGGTGA CTCTCCGTT CCTTGGGTCC 60  
 CGTCGTCTGT GATACTGCA TTAGCCATG GCAGAACCGC AGCCCCGTC CGGCGGCTC 120  
 ACGGACGAGG CCGCCCTCAG TTGCTGCTCC GACGCGGACC CCAGTACCAA GGATTTTCTA 180  
 TTGCAGCAGA CCATGCTACG AGTGAAGGAT CCTAAGAACT CACTGGATT TTACTACTAGA 240  
 65 GTTCTGGAA TGACGCTAAT CCAAAATGT GATTTTCCA TTATGAAGT TCACTCTAC 300  
 TTCTTGGCTT ATGAGGATAA AAATGACATC CCTAAAGAAA AAGATGAAAA AATAGCCTGG 360  
 GCGCTCTCCA GAAAAGCTAC ACTTGAGCTG ACACACAATT GGGGCACTGA AGATGATGCG 420  
 ACCCAGAGTT ACCACAATGG CAATTGAGC CCTCGAGGAT TGGTTCATAT TGAATTGCT 480  
 GTTCTGATG TATACAGTGC TTGTAAAAGG TTGAAGAAC TGGGAGTCAA ATTTGTGAAG 540  
 70 AAACCTGATG ATGTGAAAAA GAAAGGCTG GCATTTATTC AAGATCTGA TGGCTACTGG 600  
 ATTGAAATTT TGAATCTAA CAAAATGGCA ACCTTAATGT AGTGCTGTGA GAATTTCTCT 660  
 TTGAGATTTT AGAAGAAAGG AAACAATGTG ATTCAAGATA TTACATACC AGAAGCATCT 720  
 AGGACTGATG GATCACTGTC CCGATTCAAA TTATTTCTCA GTCCATTTC CCTTCTATT 780  
 75 TCAGCTGTTT CTTTCACTT AACTGTTCAG TCATTTCTGG TTCAAGCAG TGCTTTATCT 840  
 CATGCTCTTG AATATAGTTG TGTAACTTTA TTTTITAGGT AATAATTAGA ACAGTTCCT 900  
 TCAGAGGCTG CATTTGCCCT TTCTGCCAC CTAATATTA CTTCCTTCA AATCTGCCCT 960  
 TGAATCATCA TTTTAAAAA AAAATTAACA TGTTTTGTG GTAGTTATCT TCTGGGTTT 1020  
 CAATTCTCA GAAACAAC TTTTCAAC GAAAGGAAA GAACACTAGT GTTCTTTCAG 1080  
 TAAAGTACAA AGTGTTTATT TTACAAAAGA GTAGGTACTC TTGAGAGCAA TTCAATCAT 1140

5 GCTGACAAGG ATACTGATAG AAAAAGTGAT TTCTTCTTAT TATAAAGTAC ATTTAAAGTT 1200  
 CAAGGACTAA CCTTATTTAT TTGGGAAAGG GGAGGAGGAA GGAAATGATA TGGTACCCAG 1260  
 ACCTGGGCT AGGCTGCAAC TTTATCTCAT TTAATACTCC CAGCTGTATC GTGAGAAAGA 1320  
 AAGCAGGCTA GGCATGTGAA ATCACTTTCA TGOATTATTA ATGGATTTAA GAGGGCATCA 1380  
 ATCAGCTCAA CTCAAGATT CATAATCAT TTTAGTATTT AGATTGTGCC TCAAAGTTGT 1440  
 AGTACCTCAC AATACCTCCA CTGGTTTCTT GTTGTAAAAA CCTTCAGTGA GTTTGACCAT 1500  
 TGTGCTCTTG GCTCTTGGGC TGGAGTACCG TGGTGAGGGA GTAAACACTA GAAGTCTTTA 1560  
 GTACAAAAC GCTCTAGGGA CACCTGGTGA TTCTACACA AGTGATGTTT ATATTCTCA 1620  
 10 TAAAGAGTCT TCCTATGCC AAGGTCTTCA TGATGCCAGT AGCCATATAT GATAAATTAT 1680  
 GTTCAGTGAT AACTTAGTTA TCAGAAATCA GCTCAGTGGT CTTCCTCGCC ATGATTACA 1740  
 TTGATGAGT TTTAAAAAT CAAAGTGATT TTGAAAATCT CTAATGGCTC AGAAAAATAA 1800  
 AACATCCAGT TTGTGGATGA CTATATTAG ATTTCTCTAG ACTCTAGTGG AAGAACCTTG 1860  
 GAAAGGCCAT GCCAACCGTG CTGTACTGCT TAGAAGCACT TTATGTTTCC TTTTGGGTG 1920  
 15 AAATGGATT ATGTGAGTGC TTTAAACAAA TAGCAATACT TATAGACTGA AATAAAATGA 1980  
 AACTCAAAT AAG

## SEQ ID NO:120 PFJ3 Protein sequence

Protein Accession #: NP\_006699.1

20 1 11 21 31 41 51  
 MAEPQPPSGG LTDEAALSCC SDADPSTKDF LLQQTMLRVK DPKKSLDYFT RVLGMTLIQK 60  
 CDFFIMKFSL YFLAYEDKND IPKEKDEKIA WALSRKATLE LTHNWGTEDD ATQSVYHNGNS 120  
 25 DFRGFHIGI AVPDVYSACK RFEELGVKVF KFPDDGKMKG LAFIQDPDGY WIELNPNKM 180  
 ATLM

## SEQ ID NO:121 PFJ2 DNA SEQUENCE

Nucleic Acid Accession #: NM\_002867

Coding sequence: 70-729 (underlined sequences correspond to start and stop codons)

30 1 11 21 31 41 51  
 CCGACGCCAG GTCTGCGGT CCGCGCGACC GTCCGGGAGC GAACCCGTCG TCCCGCACTG 60  
 GAGTCCGCGA TGGCTTCAGT GACAGATGGT AAACATGGAG TCAAAGATGC CTCTGACCAG 120  
 AATTITGACT ACATGTTTAA ACTGCTTATC ATTGGCAACA CAGATGTGTG CAAGACCTCC 180  
 35 TTCTCTTTCG CTTATGCTGA TGACACGTTT ACCCCAGCCT TCGTTAGCAC CGTGGGCATC 240  
 GACTTCAAGG TGAAGACAGT CTACCGTCAC GAGAAGCGGG TGAACCTGCA GATCTGGGAC 300  
 ACAGCTGGGC AGGAGCGGTA CCGGACCATC ACAACAGCCT ATTACCGTGG GCCCATGGGC 360  
 TTCATTCTGA TGTATGACAT CACCAATGAA GAGTCCTTCA ATGCTGTCCA AGACTGGGCT 420  
 ACTCAGATCA AGACCTACTC CTGGGACAAT GCACAAGTTA TTCTGGTGGG GAACAAGTGT 480  
 GACATGGAGG AAGAGAGGGT TGTTCCTACT GAGAAGGGCC AGCTCCTTGC AGAGCAGCTT 540  
 40 GGGTTTGATT TCTTTGAAGC CAGTGCAAAG GAGAACATCA GTGTAAGGCA GGCTTTTGA 600  
 CGCCTGGTGG ATGOCATTGG TGACAAGATG TCTGATTGCG TGGACACAGA CCGTCTGATG 660  
 CTGGGCTCTT CCAAGAACAC GGTCTCTCTG GACACCCAC CGCTGCTGCA GCAGAACTGC 720  
 TCATGCTAGC AAGGCCACCC TTCTGACCT CCGCTCATTG TGGCCCCACA CCAAGTCTG 780  
 50 CTCTCCTCTG TTACACACTG TCGGCTCT

## SEQ ID NO:122 PFJ2 Protein sequence

Protein Accession #: NP\_002858.1

5 1 11 21 31 41 51  
 MASVTDGKHG VKDASDQNFQ YMFKLLIGN SSVGKTSFLL RYADDTFIPA FVSTVGIDFK 60  
 VKTVYRHEKR VKLQIWDTAG QERYRTITTA YYRGAMGHIL MYDITNEESF NAVQDWATQI 120  
 10 KTYSWDNAQV ILVGNKCDME EERVVPTEKG QLLAEQLGFD FFEASAKENI SVRQAFERLV 180  
 DAICDKMSDS LDTDPMSLGS SKNTRLSDTPL LQQNQCSC

## SEQ ID NO:123 PFJ1 DNA SEQUENCE

Nucleic Acid Accession #: NM\_001844

Coding sequence: 158-4821 (underlined sequences correspond to start and stop codons)

5 1 11 21 31 41 51  
 ACGCAGAGCG CTGCTGGGCT GCGGGGTCTC CCGCTTCTCT CTCTGCTCTC AAGGGCCTCC 60  
 TGCATGAGGG CCGGTAGAG ACCCGGACCC GCGCGGTGCT CCGTCCGTTT CGCTGCGCTC 120  
 CGCCGGGCC CCGCTCAGCC AGGCCCGCG GTGAGCCATG ATTCCGCTCG GGGCTCCCA 180  
 5 GTGCTGGTG CTGCTGAGCG TGCTGCTGCG CGCTGCTCTT CGGTGTGAGG GCCAGGATGT 240  
 CCAGGAGGCT GGCAGCTGTG TGCAGGATGG GCAGAGGTAT AATGATAAGG ATGTGTGGAA 300  
 GCGGAGGCC TGCCGGATCT GTGCTGTGA CACTGGGACT GTCTCTGCG ACGACATAAT 360  
 CTGTGAAGAC GTGAAAGACT GCCTCAGCCC TGAGATCCCC TTCGGAGAGT GCTGCCCCAT 420  
 CTGCCCAACT GACCTGCGCA CTGCCAGTGG GCAACCAGGA CCAAAGGGAC AGAAAGGAGA 480  
 ACCTGGAGAC ATCAAGGATA TTGTAGGACC CAAAGGACCT CCTGGGCTC AGGGAACCTGC 540



AGGGGAACAA GGACCCAGAG GGGATCGTGG TGACAAAGGT GAAAAAGGTG CCCCTGGACC 600  
 TCGTGGCAGA GATGGAGAAC CTGGGACCCC TGGAATCCTT GCCCCCCTG GTCTCCCGG 660  
 CCCCCTGGT CCCCCTGGTC TTGGTGGAAA CTTTGTCTCC CAGATGGCTG GAGGATTGGA 720  
 TGAAAAGGCT GGTGGCGCCC AGTTGGGAGT AATGCAAGGA CCAATGGGCC CCATGGGACC 780  
 TCGAGGACCT CCAGGCCCTG CAGGTGTCTC TGGGCCTCAA GGATTTCAG GCAATCCTGG 840  
 TGAACCTGGT GAACCTGGTG TCTGTGTCTC CATGGGTCCC CGTGTCTCTC CTGGTCCCC 900  
 TGGAAAGCCT GGTGATGATG GTGAAGCTGG AAAACCTGGA AAAGCTGGTG AAAGGGGTCC 960  
 GCTGTCTCT CAGGTGTCTC GTGGTTTCCC AGGAACCCCA GGCTTCTCT GTGTCAAAGG 1020  
 TCACAGAGGT TATCCAGGCC TGGACGGTGC TAAGGGAGAG GCGGGTCTC CTGGTGTGAA 1080  
 GGGTGAGAGT CCGTCCCGG GTGAGAACGG ATCTCCGGGC CCAATGGGTG CTCGTGGCCT 1140  
 GCTGTGTGAA AGAGGACGGA CTGGCCCTGC TGGCGCTGCG GGTGCCCGAG GCAACGATGG 1200  
 TCAGCCAGCG CCCGAGGTG CTCGGGTCTC TGTGGTCTCT GCTGTGTCTC CTGGCTTCCC 1260  
 TGGTGTCTT CAGGCCAAGG GTGAAGCCGG CCCCACTGGT GCCGTGGTG CTGAAGGTGC 1320  
 TCAAGGTCTT CCGGTGTAAC CTGGTACTCC TGGGTCCCCT GGGCTGTCTG GTGCCCTCCG 1380  
 TAACCTGGA ACAGATGGA TTCTGGAGC CAAAGGATCT GCTGTGTCTC CTGGCATTGC 1440  
 TGGTGTCTT GGTTCCTCT GGGCACGGGG TCTCTCTGGC CTCAAGGTG CAACTGGTCC 1500  
 TCTGGGCCCC AAAGGTCAGA CCGGTGAACC TGGTATTGCT GGTTCAAAAG CTGAACAAGG 1560  
 CCCCAGGAGA GAACCTGGCC CTGTGGCCC CCAGGGAGCG CTGGAGCCC CTGGTGAAGA 1620  
 AGGCAAGAGA GGTGCCCGTG GAGAGCCTGG TGGCGTTGGG CCAATCGGTC CCCCTGGAGA 1680  
 AAGAGGTGCT CCGGAAACCC GCGGTTTCCC AGGTCAAGAT GGTCTGGCAG GTCCCAAGGG 1740  
 AGCCCTGGA GAGCGAGGGC CAGTGTCTT TGTGGCCCC AAGGGAGCCA ACGGTGACCC 1800  
 TGGCGTCTT GGAGAACCCT GCTTCTCTG AGCCCGGGT CTCCTGGCC GCCCTGGTGA 1860  
 TGTGTCTCT CAGGCCAAGG TTGGCCCTT TGGAGCCCCT GGTGAAGATG TCGTCTCTGG 1920  
 AACTCCAGGT CTCAAGGGGG CTCGTGGGCA GCCTGTGTCT ATGGGTTTCC CTGGCCCCAA 1980  
 AGGTGCCAAC GGTGAGCCTG GCAAAGCTGG TGAGAAGGGA CTGGCTGGTG CTCTGGTCT 2040  
 GAGGGGTCTT CTGTCAAAAG ATGGTGAAC AGGTGTCTGA GGACCCCTG GCCCTGTCTG 2100  
 ACCTGTCTT GAACGAGGCG AGCAGGGTGC TCCTGGGCCA TCTGGGTTC AGGGACTTCC 2160  
 TGGCCCTCT GTGCCCCAG GTGAAGGTGG AAAACCAAGT GACCAAGGTG TTCCTGGTGA 2220  
 AGCTGGAGCC CTGGCCTCG TGGGTCCAG GGGTGAACGA GGTTCCTCAG GTGAACGTGG 2280  
 CTCTCCCGGT CCGGAAACCC TCCAGGGTCC CCGTGGCTC CCGGCACCTC GTGGCACTGA 2340  
 TGGTCCAAA GTTGCACTG GCCCAGCAGG CCCCTCTGGC GCACAGGGCC CTCAGGTCT 2400  
 TCAGGGAATG CTTGGCGAGA GGGGAGCAGC TGGTATCTG GGGCCAAAAG GCGACAGGG 2460  
 TGACGTGGT GAGAAAGGCC CTGAGGGAGC CCTGGAAAAG GATGGTGGAC GAGGCTGAC 2520  
 AGGTCCCATT GGGCCCCCTG GCCCAGCTGG TGCTAACGGC GAGAAGGGAG AAGTTGGACC 2580  
 TCTGTCTCT CAGGAACTCG CTGGTGTCTG TGGCGCTCCG GGTGAACGTG GAGAGACTGG 2640  
 CCCCCCGGA CAGCGGGAT TTGCTGGGCC TCTGTGTCTG GATGGCCAGC CTGGGGCCAA 2700  
 GGGTGAGCAA GGAGAGGCCG GCCAGAAAGG CGATGCTGGT GCCCTGGTG CTCAGGGCCC 2760  
 CTCTGGAGA CTTGGGCTC AGGGTCTAC TGGAGTACT GGTCTAAAAG GAGCCCGAGG 2820  
 TGCCCAAGGC CCCCAGGGAG CCACTGGATT CCTTGGAGCT GCTGGCCCGG TTGGACCCCC 2880  
 AGGTCCCAAT TACCAGCCTG GACCCCTGG TCCCCTGGT CTTCTGGAA AAGATGGTCC 2940  
 CAAAGGTCT CAGGAGGACA GCGGCCCCCC TGGCCGAGCT GGTGAACCCG GCTCCAAAG 3000  
 TCTCTGGA CCCCCTGGCG AGAAGGGAGA GCTGGAGAT GACGCTCCT CTGGTGGCGA 3060  
 AGGTCCACCA GGTCCCCAGG GTCTGGCTGG TCAGAGAGGC ATCGTGGTC TGGCTGGCA 3120  
 ACCTGGTGA AGAGGATTCC CTGGCTTGG TGGCCCATG GGTGAGCCCG GCAAGCAGGG 3180  
 TGCTCTGGA CAGCTTGGAG ACAGAGGTCC TCTGGCCCC GTGGTCTCT CTGGCCTGAC 3240  
 GGGTCTGCA GGTGAACCCG GACGAGAGGG AAGCCCCGGT GCTGATGGCC CCGCTGGCAG 3300  
 AGATGGCCT GCTGGAGTCA AGGTGATCG TGGTGAAGT GGTGTGTGG GAGCTCTGG 3360  
 AGCCCTGGG CCCCCTGGCT CCGCTGGCCC CGCTGTGCTA CTGGCAAGC AAGGAGACAG 3420  
 AGGAGAAGCT GGTGCACAAG GCCCATGGG ACCCTCAGGA CCAGCTGGAG CCGGGGAAT 3480  
 CCAGGTGCT CAAGGCCCA GAGGTGACAA AGGAGAGGCT GGAGAGCCTG GCGAGAGAGG 3540  
 CTTGAAGGGA CACCGTGGCT TCACTGGTCT GCAGGGTCTG CCGGGCCCTC CTGGTCTTCT 3600  
 TGGAGACCAA GGTGCTTCTG GTCCTGTCTG TCTTCTGGC CTAGAGGTG CTCCTGGCCC 3660  
 CGTGGTCCC TCTGGCAAAG ATGGTGTCTA TGGATCCTT GGGCCATTG GGCCTCTGG 3720  
 TCCCGTGA CAGTACGGCG AAACCGGTCC TGTGTCTCT CTGGAAATC CTGGGCCCCC 3780  
 TGGTCTCCA GGTCCCCCTG GGCCTGGCAT CGACATGTCC GCTTGTCTG GCTTAGGGCC 3840  
 GAGAGAGAA GGGCCCGACC CCGTGCAGTA CATGCGGGCC GACCAAGGAG CCGGTGGCCT 3900  
 GAGACGAT GACCGCGAGG TGGATGCCAC ACTCAAGTCC CTCACAACC AGATTGAGAG 3960  
 CATCGCAGC CCGAGGGCT CCGCAAGAA CCTGTCTGC ACTGCAGAG ACCTGAAACT 4020  
 CTGCCACCT GAGTGAAGA GTGGAGACTA CTGGATTGAC CCCAACCAAG GCTGCACCTT 4080  
 GGACGCCATG AAGGTTTCT GCAACATGGA GACTGGCGAG ACTTGGCTCT ACCCAATCC 4140  
 AGCAACGTT CCAAGAAGA ACTGGTGGAG CAGCAAGAGC AAGGAGAAGA AACACATCTG 4200  
 GTTGGAGAA ACCATCAATG GTGGCTTCCA TTTCAGCTAT GGAGATGACA ATCTGGCTCC 4260  
 CAACACTGCC AACGTCCAGA TGACCTTCT ACCTGTCTG TCCACGGAAG GCTCCAGAA 4320  
 CATCACTAC CACTGCAAGA ACAGCATTGC CTATCTGGAC GAAGCAGCTG GCAACCTCAA 4380  
 GAAGGCCCTG CTCATCCAGG GCTCCAATGA CGTGGAGATC CGGGCAGAGG GCAATAGCAG 4440  
 GTTCACGTAC ACTGCCCTGA AGGATGGCTG CACGAAACAT ACCGGTAAGT GGGGCAAGAC 4500  
 TGTATGGAG TACCGGTGAC AGAAGACCTC ACCTCCCTCC ATCAITGACA TTGCACCCAT 4560  
 GGACATAGGA GGGCCCGAGC AGGAATTCGG TGTGGACATA GGGCCGGTCT GCTTCTGTA 4620  
 AAAAAGTAA CCGAGAAACA ACACAATCCG TTGCAAAACC AAAGGACCCA AGTACTTTCC 4680  
 AATCTAGTC ACTCTAGGAC CTGCACTGA ATGGCTGACC TGACCTGATG TCAATTCATC 4740  
 CCACTCTC ACAGTTGGA CTTTCTTCCC CTCTCTTCT AAGAGACCTG AACTGGGCAG 4800  
 ACTGCAAAAT AAAATCTCGG TGTCTATTT ATTTATGTG TCTCTGTAAG ACTTCCGGT 4860  
 CAAGGCAGAG GCAGGAAACT AACTGGTGTG AGTCAAAATG CCGCTGAGTG ACTGCCCCA 4920  
 GCCAGGCCA GAAGACTCC CTTAGGTGC CGGGCGCAGG AACTGTGTGT GTCTACACA 4980  
 ATGGTGTCT TCTGTGTC AAACCTCTGT ATTTTAAAA ACATCAATTG ATATTAAAA 5040  
 TGAAAAGATT ATTGAAAGT

Protein Accession #: NP\_001835.2

1 11 21 31 41 51  
5 MRLGAPQSL VLLTLLVAAV LRCQQQDVQE AGSCVQDQQR YNDKDVKWKE PCRICVCDTG 60  
TVLCDDICE DVKDCLSFEI PFGECCPICP TDLATASGP GPKGQKGEPS DIKDIVGPKG 120  
PPFPQGPAGE QGFRGDRGDK GEKGAPGPRG RDGEPTGN PGPPGPPPP GPPGLGNNFA 180  
AQMAGGFDEK AGGAQLGVMQ GPMGPMGPRG PGPAGARGP QGFOGNPGE GPVSGPMG 240  
10 PRGPPGPPGK PGDDGEAGKP GKAGERGPPG PQGARGPPT PGLPVKGHR GYPGLDGAKE 300  
EAGAPGVKGE SGSPGEGNSP GPMGPRGLPG ERGRTGPAGA AGARGNDGQP GPAGPPGPVG 360  
PAGGPGFPGA PGAKGEAGPT GARGPEGAQG PRGEPGTPGS PGPAGASGNP GTDGPAGAKG 420  
SAGAPGIAGA PGFPGRGPP GPQATGPLG PKGQTGEPI AGFKGEQPK GEPGAPGQ 480  
APGPAGEGK RGARGEPPG GPFGPPGERG APGNRGPPG DGLAGPKAP GERGPSGLAG 540  
15 PKGANGDPGR PGEPLPGAR GLTORPGDAG PQGKVGPSGA PGEDGRGPP GPQARGQPG 600  
VMGFPKGGA NGEPKGAGEK GLPGAPLGR LPKDGGETGA AGPPGAPGA GERGEQGAPO 660  
PSGQQLPGP PGPPGEGGKP GDQGVFGEAG APGLVGPRGE RGPPGERGSP GAQGLQGP 720  
LPGTPTDGP KGASGDPGPP GAQGPPLQG MPGERGAAGI AGFKGDRGDV GEKGPEGAPG 780  
KDGGRGLTGF IGPFPAGAN GEKGEVGPFG PAGESAGARGA PGERGETGPP GPAGFAGPP 840  
20 ADGQPAKGE QGEAGQKGA GARGPQGPSG APGPQGTGV TPKGARGAQ GPPGATGPP 900  
AAGRVGPPG NGNPFPGP GPSPKDGPK ARGDSGPPR AGEPLQGA GPPGKGEPP 960  
DDGPSAEGP PGQGLAGQR GIVGLPQQR ERGFPGLPG SGEPGKQAG GASGDRGPPG 1020  
FVGPPLTGP KAGSGREGSP GADGPPGRDG AAGVKGDRGE TGAVGAPGAP GPPGSPGAP 1080  
PTKGQDRGE AGAGPMGFS GPAGARGIQ PQGPRGDKGE AGEGERGLK GHRGFTLQG 1140  
25 LPGPFGSD QOASGPAGS GPRGPPGVP PSKDGANGI GPFGPPGPR GRSGETGPA 1200  
PFGNPPGPP PGPPGPDIM SAFAGLPRE KGPDLQYMR ADQAAGGLRQ HDAEVDATLK 1260  
SLNQIESIR SPFGSRKNA RTCRDLKCH PEWKSQDYWI DPNQGGCTLA MKVFCNMTG 1320  
ETCVYNPAN VPKNWSSK SKKKHWFGE ETINGGFHS YGDDNLAPNT ANVQMTFLRL 1380  
LSTEGSQNT YHCKNSIAYL DEAAGNLKA LLIQGSNDVE BRAEGNSRFT YTALKDGCTK 1440  
30 HTGKWGKTVI EYRSQKTSRL PIDIAPMDI GGPEQFQVD IGPVCF

## SEQ ID NO:125 PFH9 DNA SEQUENCE

Nucleic Acid Accession #: NM\_005084

Coding sequence: 162-1487 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
40 GCTGGTCGGA GGCTCGCAGT GCTGTCGGCG AGAAGCAGTC GGGTTTGGAG CGCTTGGGTC 60  
GGTTTGGTGC GCGGTGGAAC GCGCCAGGG ACCCAGTTC CCGCGAGCAG CTCGCCGCCG 120  
CGCTGAGAG ACTAAGCTGA AACTGCTGCT CAGCTCCCAA GATGGTGCCA CCCAAATTGC 180  
ATGTGCTTTT TGCCCTCTGC GGCTGCTGG CTGTGGTTTA TCCTTTGAC TGGCAATACA 240  
TAAATCCTGT TGCCCATATG AAATCATCAG CATGGGTCAA CAAAATACAA GTACTGATGG 300  
45 CTGTGCAAG CTTTGGCAA ACTAAATCC CCGGGGAAA TGGGCTTAT TCGGTTGGTT 360  
GTACAGACTT AATGTTTGT CACACTAATA AGGGCAOCTT CTTCGGTTTA TATTATCCAT 420  
CCCAAGATAA TGATCGCCTT GACACCTTT GGATCCCAA TAAAGAATAT TTTGGGGTC 480  
TTAGCAAT TCTTGGAAAC CACTGGCTTA TGGGCAACAT TTTGAGTTA CTCTTTGGTT 540  
CAATGCAAC TCCTGCAAC TGGAAATCCC CTCTGAGGCC TGGTAAAAA TATCCACTTG 600  
50 TTGTTTTCT CATGGTCTT GGGGCATTCA GGACACTTTA TCTGCTATT GGCATTGACC 660  
TGGCATCTCA TGGGTTTATA GTTGTGCTG TAGAACACAG AGATAGATCT GCATCTGCAA 720  
CTTACTATT CAAGGACCAA TCTGCTGCAG AAATAGGGGA CAAGTCTTGG CTCTACCTTA 780  
GAACCTGAA ACAAGAGGAG GAGACACATA TACGAAATGA GCAGGTACGG CAAAGAGCAA 840  
AAGAATGTT CCAAGCTCTC AGTCTGATTC TTGACATTGA TCATGGAAAG CCAATGAAAG 900  
55 ATGTATTAGA TTTAAAGTTT GATATGGAAC AACTGAAGGA CTCTATTGAT AGGGAAAAA 960  
TAGCAGTAAT TGGACATCTT TTTGGTGGAG CAACGGTTAT TCAGACTCTT AGTGAAGATC 1020  
AGAGATTGAG ATGTGGTATT GCCCTGGATG CATGGATGTT TCCACTGGGT GATGAAGTAT 1080  
ATCCAGAAT TCTCAGCCC CTCTTTTITA TCAACTCTGA ATATTCCAA TATCCTGCTA 1140  
ATATCATAAA AATGAAAAA TGCTACTCAC CTGATAAAGA AAGAAAGATG ATTACAATCA 1200  
60 GGGGTTGAGT CCACAGAAAT TTTGCTGACT TCACTTTTGC AACTGGCAAA ATAATTGGAC 1260  
ACATGCTCAA ATTAAGGGA GACATAGATT CAAATGTAGC TATTGATCTT AGCAACAAAG 1320  
CTTCATTAGC ATCTTACAA AAGCATTTAG GACTTCATA AGATTTTGT CAGTGGGACT 1380  
GCTTGATTGA AGGAGATGAT GAGAACTTA TTCCAGGGG CAACATTAA ACAACCAATC 1440  
AACACATCAT GTTACAGAAC TCTCAGGAA TAGAGAAATA CAATTAGGAT TAAATAGGT 1500  
TTTT

SEQ ID NO:126 PFH9 Protein sequence:

Protein Accession #: NP\_005075.1

1 11 21 31 41 51  
70 MPPKLVHVF CLCGCLAVVY PFDWQYNPV AHMKSSAWVN KIQVLMAAAS FGQTKIPRGN 60  
GPYSVGCIDL MFDHTNKGTP LRLYYPSQDN DRDLTLWPN KEYFWGLSKF LGTHWLMGNI 120  
75 LRLFLGSMIT PANWNSPLRP GEKYPLVVS HGLGAFRLTY SAIGIDLASH GFIVAIVEHR 180  
DRSASATYYP KDQSAAEIGD KSWLYLRLK QEEETHIRNE QVRQRAKES QALSILIDID 240  
HGKPVKNALD LKFDMEQLKD SIDREKIAVI GHSFGGATVI QTLSEDQRFR CGIALDAWMF 300  
PLGDEVYSRI PQPFFINSE YRQYPAIIK MKKCYSPDKE RKMITRGSV HQNFADETFE 360  
TGKIGHMLK LKGDIDSVA IDLSNKASLA FLQKHLGLHK DFDQWDCLIE GDDENLPGT 420  
NINTNQHM LQNSSGIEKY N

## SEQ ID NO:127 PFH8 DNA SEQUENCE

5 Nucleic Acid Accession #: NM\_015900  
Coding sequence: 32-1402 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51

10 CACGAGCGGC ACGAGGATTT CCAGCTCAGC GATGCCCCCA GGTCCCTGGG AGAGCTGCTT 60  
CTGGGTGGGG GGCTCATTT TGTGGCTCAG CGTTGGAAGT TCAGGGGATG CACCTCTAC 120  
CCACAGCCA AAGTGCCTG ACTTCCAGAG CGCCAACCTT TTTGAAGGCA CCGATCTCAA 180  
AGTCCAGTTT CTCTCTTTG TCCCTTCGAA TCCTAGCTGT GGCAGCTAG TAGAAGGAAG 240  
CAGTGACCTT CAAACTCTG GGTTCATGC CACTCTGGA ACCAACTAA TTATCATGG 300  
15 ATTACGGGTT TTAGGAACAA AGCCTCTCTG GATTGACACA TTTATTAGAA CCTTCTGCG 360  
TGCAACGAAT GCTAATGTGA TTGCCGTGGA CTGGATTAT GGTCTACAG GAGTCTACTT 420  
CTCAGCTGTG AAAAAATGTA TTAAGTTGAG CCTCGAGATC TCCTTTTCC TCAATAAACT 480  
CCTGTGCTG GGTGTGTGG AATCCTCAAT CCACATCATT GGTGTAGCC TGGGGGCCCA 540  
CGTTGGGGGC ATGGTGGGAC AGCTCTTGG AGGCCAGCTG GGACAGATCA CAGGCCTGGA 600  
20 CCCCCTGGA CCGTAGTACA CCAGGCCAG TGTGGAAGAG CGCTTGGATG CTGGAGATGC 660  
CCTCTTCTGT GAAGCCATCC ACACAGACAC CGACAATTG GGTATTGGA TTCCCGTTGG 720  
ACATGTGGAC TACTTCGTCA ACGGAGGCCA AGACCAACCT GGCTGCCCA CCTTCTTTA 780  
CGCAGGTTAT AGTTATCTGA TCTGTGATCA CATGAGGGCT GTGCACCTCT ACATCAGCGC 840  
CCTGAGAAT TCTGTCCAC TGATGGCCTT TCCTGTGCC AGCTACAAGG CCTTCTTGC 900  
25 TGGACCTGT CTGGATTGCT TTAACCTTT TCTGCTTCC TGCCAAGGA TAGGACTGGT 960  
GGAACAAGGT GGTGTCAAGA TAGAGCCGCT CCCAAGGAA GTGAAAGTCT ACCTCTGAC 1020  
TACTTCCAGT GCTCCGTA CTGATGCATCA CAGCCTCTGT GAGTTTCACT TGAAGGAAC 1080  
GAGAAACAAG GACACCAACA TCGAGGTTAC CTTCCTTAGC AGTAACATCA CCTCTTCATC 1140  
TAAGATCAC ATACTAAGC AGCAACGCTA TGGGAAAGGA ATCATAGGCC ATGCCACCCC 1200  
30 ACAATGCCAG ATAAACCAAG TGAATTCAA GTTTCAGTCT TCCAACCGAG TTTGGAAAAA 1260  
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CCTGAAGATA GCGTGTGTG AGTTTAACCT GGGCAGGACA CATCTCCCTG CATTTTTTTT 1440  
TTTTTTTTT GAGAGAGAGG TGTGATGAGG GATGTGTGTG TGCAGCTTAT TGTAGACCAT 1500  
35 TACTACTAAG GAGAAAGCA AAGCTCTTC TATTTTCT CATAATCAGC TACCCTGGAG 1560  
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TTTTAGCTTT CCCATGCATA CTTAAGTCA CTTCCTTAT CTCTTGGG ATTCGTACTT 1680  
AGGATTCAAT AGAAACATGT ACAGGGTAAA CAATTTTTTA AAAATAAAC TTCATGGAGT 1740  
40 AAAAAAAAAA AAAAAAAAAA

SEQ ID NO:128 PFH8 Protein sequence:  
Protein Accession #: NP\_056984.1

45 1 11 21 31 41 51

MPPGPWESCF WVGGLILWLS VGSSGDAPPT PPKCADFQS ANLFEGTDLK VQFLFVPSN 60  
PSCGQLVEGS SDLQNSGFNA TLGTLIHG FRVLGTPSW IDTFIRLLR ATNANVIAVD 120  
50 WYGGSTGVYF SAVKNVILKS LEISLFLNKL LVLGVSESI HIIGVSLGAH VGGMVGGQLFG 180  
DQGGQTGLD PAGPEYTRAS VEERLDAGDA LFVEAIHDT DNLGIRIPVG HVDYFVNGGG 240  
DQGGCTFFY AGSYLYICDH MRAVHLYISA LENSCHLMF PCSYKAFLA GRCLDCNPFF 300  
LLSCPRIGLV EQGGVKIEPL PKEVKVYLLT TSSAPYCMHH SLVEFHLKEL RNKDTNIEVT 360  
FLSSNITSS KITPKQORY GKILAHATP QCQINQVKFK PQSSNRVWKK DRTTIGKPC 420  
55 TALLPVNDRE KMVCLPEPVN LQASVTVSCD LKIACV

## SEQ ID NO:129 PFH7 DNA SEQUENCE

60 Nucleic Acid Accession #: NM\_014384  
Coding sequence: 89-1336 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51

65 CGTTGCCGGG TCGCAGGTCC CGCCAGTGC AGCGCAACGG AGGTCGAAGG CGTTCAGACT 60  
CTTAGCTGAA CGCGGAGCTG CGCGCGCTAT GCTGTGGAGC GGCTGCGGC GTTTCGGGGC 120  
GGCCTCGGC TGCCTGCCG GCGGTCTCCG GGTCTCGTC CAGACCGGCC ACCGGAGCTT 180  
GAOCTCTGC ATCGACCTT CCATGGGACT TAATGAAGAG CAGAAAGAT TTCAAAAGT 240  
GGCCTTGAC TTTGCTCCC GAGAGATGGC TCCTAAATATG GCAGAGTGGG ACCAGAAGGA 300  
70 GCTGTCCCA GTGGATGTGA TGCGGAAGGC AGCCAGCTA GGCTCGGAG GGGTCTACAT 360  
ACAAACAGAT GTGGGGGGGT CTGGGCTGTC ACGTCTGAT ACCTCTGTCA TTTTGAAGC 420  
CTGGCTACA GCGTGCACA GCACCACAGC CTATATAAGC ATCCACAACA TGTGTGCTG 480  
GATGATTGAT AGCTTCGGAA ATGAGGAACA GAGGCACAAA TTTTGCCAC CGCTCTGTAC 540  
CATGGAGAAG TTTGCTTCT ACTGCTCAC TGAACCAAG AGTGGGAGTG ATGCTGCTC 600  
75 TCTTCTGACC TCCGCTAAGA AACAGGGAGA TCATTACATC CTCAATGGCT CCAAGGCCCT 660  
CATCAGTGTG GCTGTGTAGT CAGACATCTA TGTGTTCATG TGCCGAACAG GAGGACCAGG 720  
CCCCAAGGGC ATCTACATCA TAGTTGTTGA GAAGGGGACC CCTGGCTCA GCTTTGGCAA 780  
GAAGGAGAAA AAGGTGGGT GGAAGTCCCA GCCAACACGA GCTGTGATCT TCGAAGACTG 840  
TGCTGTCCCT GTGGCCAACA GAATTGGAG CGAGGGGCAG GGCTTCTCA TTCCGTGAG 900

AGGACTGAAC GGAGGGAGGA TCAATATTGC TTCTGCTCC CTGGGGGCTG CCCACGCTC 960  
TGTCATCTC ACCCGAGACC AOCTCAATGT COGGAAGCAG TTTGGAGAGC CTCTGGCCAG 1020  
TAACCACTAC TTGCAATTCA CACTGGCTGA TATGGCAACA AGGCTGGTGG CCGCGCGGCT 1080  
GATGGTCCGC AATGCAGCAG TGGCTCTGCA GGAGGAGAGG AAGGATGCAG TGGCCTTGTG 1140  
CTCCATGGCC AAGCTCTTTG CTACAGATGA ATGCTTTGCC ATCTGCAACC AGGCCTTGCA 1200  
GATGCACGGG GGCTACGGCT ACCTGAAGGA TTACGCTGTT CAGCAGTACG TGGCGGACTC 1260  
CAGGGTCCAC CAGATTCTAG AAGGTAGCAA TGAAGTGATG AGGATACTGA TCTCTAGAAG 1320  
CCTGCTTCAG GAGTAGAACC CACACTTGT TTGGCCTGGT GTTCAGTGG ACTGCAGTCA 1380  
GTGTTGATG GTGCCATGTG GGCCGCTCTA TTCCAAAGGA ATCATGGATT AGACCCAAGG 1440  
GCTGAGCTCC TCTAGGGCAG GACCTGCACC CTGTGTGTTG GCACCAGCAT CGGGTCTTGG 1500  
ACTGGGGCAG AATCCCAAGT GGAACCGGAA GAGCTGGACT GATGAGAAAC ATCAGAAGAA 1560  
CACATACTAC CTGTTTTTCC TAATGCCAGA AGGGTGACCA GTGAAGATTC ACCGTCAAA 1620  
CATGAAAGTC CTTCTTGGG TCCACTTTAT CTTGATTAGT CTGCATTITA CTAGTTCACT 1680  
GGATCCCTCC TCTAGGGGCC TGGGGACTTT CACTGATGCT CTTCCTGATT CTAGAGCAAA 1740  
GGTGTGGGAA GGGGAAATGG AGGAATGCC TCCTGTCTGT GTCTTCTCT GTGCCACAGC 1800  
TACAGATGCA GAAGGTTTCT CTGGATAGCA CACCTCTGAA TGTAATCAT GATAAAATGG 1860  
ATATTGGAA ACTTACTCT AAGCTGTGAT GTAGGGGTGA TTCTACTTC TGGACTGCT 1920  
CAATATCAAG GGCTGAGACT TTGAATGTT GAATATTCGT TGGGTTTCA GTTAAGAAGC 1980  
CTGTGGTCCA GGAGTGCTAT TCAGTGTTTC TGTTCCTGAT AAACACTTTG AATATTTTTT 2040  
TGTGTTTTTG TTCTCTTTC TGAAGCTGTT CCTCTTTTA AATATTTTTA ATCAGATTGA 2100  
TAAATCTAT CCTCATCCA CCTCTGTTT TACTATAGT GATTITTTAT TTAATGTTT 2160  
AATTGATTT GATTAAACAC TTAAGTGGAT TTGGAATAA TAAACTCTC GTCCAAATTTG 2220  
GCTTTTAAAA AAAAAAAA

25  
SEQ ID NO:130 PFH7 Protein sequence:  
Protein Accession #: NP\_055199.1

30  
1 11 21 31 41 51  
MLWSGCRRFG ARLGCLPGL RVLVQTGHR LSCIDPSMG LNEEQKEFK VAFDFAAREM 60  
APNMAEWQK ELFPVDVMRK AALGFGGVY IQTDVGGSL SRLDTSVFE ALATGCTST 120  
AYISIHNMCA WMDSFGNEE QRHKFCPLC TMEKFASYCL TEPGSGSDAA SLTSAKKQG 180  
DHYLNGSKA FSGAGESDI YVVMCRITGGP GPKGISCIIV EKGTPGLSF KKEKKVGNWS 240  
QFTRAVIFED CAVPVANRIG SEGQFLIAV RGLNGGRINI ASCSLGAHA SVILTRDHLN 300  
VRKQGEPLA SNQYLQFLA DMATRLVAAR LMRVNAVAL QEERKDAVAL CSMAKLFATD 360  
ECFAICNQL QMHGGYGYLK DYAVQYVRD SRVHQLEGS NEVMRLILSR SLLQE

40  
SEQ ID NO:131 PFH8 DNA SEQUENCE  
Nucleic Acid Accession #: NM\_013989  
Coding sequence: 707-1105 (underlined sequences correspond to start and stop codons)

45  
1 11 21 31 41 51  
GCCTGCAGAG AGAGGCACCTT TGCACCACAG ACAGATAGCA AGAAGGGAAA GACAGAGAGT 60  
GAGAAAAAAG AGGAGTCACT CGCTCTCTGG GAAGGGGAGAG AGTGAGACTG GGAGAAAAAG 120  
AAGCACAGAA AGTGTGTGTA AAACGGAGTA AAGAAAGAAA AAAAAAAAC TACCTTAAA 180  
GCACATTAA AAAAAAACT CTCTGGCAAT TCAAGAAAGA AACAGGCTAC GTTTAAAGAG 240  
CATAGAGACA ATGAAGGCT AAAGAAAATT TAAAAATCTC TGCCACAGTC TCATAGGTGC 300  
TTGGAATGA AAGTAGAACT GCTGTCTTT AACGGACTCT GACAGAGGTA ACTGATTAG 360  
GGAGAGTAC GCCAGCTTTT TTTTTTTT TTTTTTTT TTTAACATCT TAAATCCTGA 420  
55  
AAAAAAGAAA AAAAAAAGAA AAAAGGCAGC AGCTCCGAAT TGAATGAATT GATGGGCACA 480  
CTCCAACTGC TGGGCTGGAG AGACTGGACT TAGTCTTGC ATTCTGCTT CTTTGAAGA 540  
GGAGACAAT TGGGCTCTCT TTTAATTAG TTTTTTTT CCTTCTCCC CAACCCCAA 600  
CCTTCCCCT TACCTCCCC ACCCCTTTA TCACCAACCC CTTTTAAAT AAGAGGGTGA 660  
AGGGGAACCA GAGCGACAA GGGAACTGAC TCAGGAGGCA GAGAAGATGG GCATCCTCAG 720  
60  
CGTAGACTTG CTGATCACAC TGCAATTTCT GCCAGTTTTT TTCTCCAACT GCTCTCTCT 780  
GGCTCTCTAT GACTCGGTCA TTCTGCTCAA GCAGCTGGTG CTGCTGTGA GCGCTCCAA 840  
GTCCACTGCG GGAGAGTGGC GGCGCATGCT GACCTCAGAG GGACTGCGCT GCGCTGGAA 900  
GAGCTTCTC CTGATGCTCT ACAACAGGT GAAATTGGGT GAGGATGCC CCAATTCCAG 960  
TGTGGTGCA TGTCTCAGTA CAGAAGGAGG TGACAACAGT GGCAATGGTA CCCAGGAGAA 1020  
65  
GATAGCTGAG GGAGCCACAT GCACTCTCT TGACTTTGCC AGCCTGAGC GCCACTAGT 1080  
GGTCAACTTT GGCTCAGCCA CTGCACTCT TTTACAGAGC CAGCTGCCAG CCTTCCGCAA 1140  
ACTGGTGGAA GAGTCTCTCT CAGTGGCTGA CTTCTGCTG GTCTACATT ATGAGGCTCA 1200  
TCCATCAGAT GGCTGGGCGA TACCGGGGGA CTCTCTTTG TCTTTGAGG TGAAGAAGCA 1260  
CCAGAACCA GAAATGAT GTGCAGCAGC CCAGCAGCTT CTGGAGCGTT TCTCTTGGC 1320  
70  
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CCCTTCTCC TACAACCTTC AAGAAGTCCG GCATTGGCTG GAGAAGAATT TCAGCAAGAG 1500  
ATGAAGAAA ACTAGATTAG CTGGTTAAAG GTATGATTAT AAGAGAGCTT ATTGTTTTAA 1560  
AAAGTTATAT AAAGGCAAGG AAATTAAGAA CTGAATCCAT ATTCAACAG AGCCCTATTG 1620  
75  
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TTCTTCTACT ACTCAATAGG CATTTGGGCTG AGTAAGTAAC CATATCACT CTCTTCTTAG 1740  
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AGACTTACCT GAATAATTAC TACATTAGGG AAGCTACTGT CTACGTTAAG ATAAAGGTA 1920

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 5 ATCTGTAATC TGAGGGTTAA TTCTAGGCC GGTGGAGAGA GTGGTAAAAA AGAAATGAAA 2220  
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 15 GTAGGTACCA TGGCCATTCA GCACAGCCTT GATTTCCTCC CAAAGTAGGT GAGCTATAGT 2820  
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 20 TAAAAATTTT TTTTCTTTT AAAATAGACA CTATAGTTT ACCCATAAGT AATATTTAAA 3120  
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 25 CAAGAACCAA ACGTATTTTA TTTATTTT TAAATGGAG CAACATATCA GTCGTGCAC 3420  
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 30 AGATTCTG TGGAAACCTA AAGCAGTAAA ATAAAAAACC TGGTTGCAGC ACATTCACAC 3720  
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 45 AAAGAACTC GGTCTGGACC TATCAAAAAC TGACTTTAT TATGTCTTAT TGAAATACT 4620  
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 GGATCATATG ACCATTGAAA AAGGAAAAAT GTAGACTCTG ACTTCCGTCC CACTGAAGGA 5340  
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 60 TTCCCTTAAA TGGTATGGCC AAAAGTCAGA GTTAAAAAT ATATAGTTAG ATTCEAACTT 5520  
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 CCTGAGGGGT TGGTCTACCA ATCTGGGAAG ATTTGAAAAA AAATCTCTCG CAAGTGAAGG 5760  
 65 AAGGCTGAAG GCTGCTGCAA GTCAATTGAGT GACTTTAGGA TGAGCAAAAC ATTGGGCCAC 5820  
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 75 TTTTGTAG TTTTGCCATC ACATTGTCAC CCAGACCTCA CTAAGCCCCA AGTAATGGG 6360  
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 TGAAGTCTT TGGGAGATTA TCAGTAGAAA GAGTGTATC ATATTGGTG TGAGTGCTAT 6660

GTGTGCTTAT ACAATTTGTT CTGTATTTT AATAAACTTT GAATAAAAGA ATAAAAAAAA 6720  
AAAAAAAAA AAAAA

5

SEQ ID NO:132 PFH6 Protein sequence:  
Protein Accession #: NP\_054844.1

1 11 21 31 41 51  
10 MGILSVLLI TLQILPVFFS NCLFLALYDS VILLKHVLL LSRSKSTRGE WRRMLTSEGL 60  
RCVWKSFLLD AYKQVKLGED APNSSVVHVS STEGGDNSGN GTQEKIAEGA TCHLLDFASP 120  
ERPLVNFQS ATXPPFTSQL PAFRKLVEEF SSVADFLVY IDEAHPSDGW AIPGDSLSF 180  
EVKKHQQED RCAAQAQLE RFLPPQCRV VADRMNNAN IAYGVAFERV CIVQRQKIAY 240  
15 LGGKGFPSYN LQEVHRWLEK NFSKRXXKTR LAG

20

SEQ ID NO:133 PFH5 DNA SEQUENCE

Nucleic Acid Accession #: NM\_001141  
Coding sequence: 72-2102 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
25 CAGGCGTTC CCAGGGGGAG CCGCGCTCTG CAGCGCTGTG CGCGTAGAG AGCTGGACTT 60  
AGGCTGGCAG CATGGCCGAG TTCAGGGTCA GGGTGTCCAC CGGAGAAGCC TTCGGGGCTG 120  
GCACATGGGA CAAGTGTGCT GTCAGCATCG TGGGGACCGG GGGAGAGAGC CCCCACATGC 180  
CCCTGGACAA TCTGGGCAAG GAGTTCACCTG CGGCGCTGA GGAGGACTTC CAGGTGACGC 240  
TCCGGAGGA CGTAGGCCGA GTGCTGTGCT TCGCGCTGCA CAAGGCGGCC CCAGTGCTGC 300  
CCCTGCTGGG GCCCTGGCC CCGGATGCTT GGTCTGCGG CTGGTTCCAG CTGACACCGC 360  
CGGCGGGCGG CCACCTCTCT TTCCCTGCTT ACCAGTGCTT GGAGGGGGCG GGGACCGCTG 420  
TGCTGCAGGA GGGTACAGCC AAGGTGTCTT GGGCAGACCA CCACCTGTG CTCCAGCAAC 480  
AGCGCCAGGA GGAGCTTACG GCCCGGCAGG AGATGTACCA GTGGAAGGCT TACAACCCAG 540  
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CCACAGCCAA GAATGCCAAC TTTTATCTAC AAGCTGGCTC TGCTTTTGCA GAGATGAAAA 660  
TCAAGGGGTT GCTGGACCGC AAGGGGCTCT GGAGGAGTCT GAATGAGATG AAAAGGATCT 720  
TCAACTCCG GAGGACCCCA GCAGCTGAGC ACGCATTGGA GCACTGGCAG GAGGATGCTT 780  
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TCCCAAAGAA CTCCCCGTC ACTGATGCCA TGGTGGGCTC ATTGTGGGT CCTGGGACCA 900  
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CACATCTGCT GCTGAGGCTT TCACTGCTG CTACCTGCG TCAGCTGCCC CACTGCCACC 1260  
CTCTCTTCAA GCTGCTGATC CCGCACACCC GATACACCT GCACATCAAC ACATCGGCC 1320  
GGGAGCTGCT TATCGTGCCA GGGCAGGTGG TGGACAGGTC CACAGGCATC GGCATTGAAG 1380  
GCTTCTCTGA GTTGATACAG AGGAACATGA AGCAGCTGAA CTATTCTCTC CTGTGTCTGC 1440  
CTGAGGATAT CCGGACCCGA GGAGTTGAAG ACATCCAGG CTACTACTAC CGTGATGATG 1500  
GGATGCAGAT TTGGGGTGCA GTGGAAAGCT TTGTCTTGA AATCATCGGT ATCTACTACC 1560  
CAAGTGATGA GTCTGTCCAA GATGACAGAG AGCTCCAGGC CTGGGTGAGA GAGATCTTCT 1620  
CCAAAGGCTT CCAAGCCAG GAGAGCTCAG GTATCCCTTC CTCACTGGAG ACCCGGGAAG 1680  
CCCTGTGCA GTATGTCAAC ATGGTGATAT TCACTGCTC AGCCAAGCAT GCGGCTGTCA 1740  
GTGCAGGCA GTTTGACTC GTGTCTTGA TGCCCAACCT GCCACCCAGC ATGCAGCTGC 1800  
CACCACCCAC CTCCAAAGGC CTGGCAACAT GCGAGGGCTT CATAGCCACC CTCCACCTG 1860  
TCAATGCCAC ATGTGATGTC ATCCTTGCTC TCTGGTGTCT GAGCAAGGAG CTTGGAGACC 1920  
AAAGGCGCTT GGGCACCTAT CCGGATGAGC ACTTCACAGA GGAGGCGCCT CGGCGGAGCA 1980  
TCGCCACCTT CCAGAGCCGC CTGGCCAGA TCTCGAGGGG CATCCAGGAG CGGAACCGGG 2040  
GCTGTGTGCT GCGCTACACC TACCTAGACC CTCCCTCAT CGAGAACAGC GTCTCCATCT 2100  
60 AAATCCAGG GGAACACAGG CCCAGATGAC ATCCCTTGA CCACATCGCT CTAGGATAAC 2160  
TGGCACCCAG AGAAAGGAC TCTCAGAAA AAACAGGCC CCAATGTGCT CTCTGGGAC 2220  
AACCAGACTT TGTAATCAC CCCCACACC ATACACACAC AAAAAACAG AAACAAAATC 2280  
AAAACAGAGA AAGCAGAAAA TCTACCAAGA ACAGAGTCTC AGGACAGAAC CACTGAGTCT 2340  
TTTGGAGGCT CCAAGCCTCA AAGTGCCGC AGAGCCACC TTGAGGGTTT TGCTAGTTGG 2400  
65 TTTGTTTTG CGTTTACAGC CGTGGGGGGA AGCACAAT CCAGCCCCAG GCGCCACTAG 2460  
CATCCACTGA TTGGACCTTA TGGTCAACCA ACTCAAGGAC AGCCACCAAG AAGTGGCTGC 2520  
CAAAGAGACT GGGCGCAGTG GCTCATGCC ATAATCCAG CACTTTGGGA GATGGAGGCG 2580  
GGAAAAATCAT TTGAGGTCAG AAGTTCAAGG CCAGCTGGA CGACATAGCG AGACTCCACC 2640  
70 TCTACCAAAA AATAAAAAAT AAAAAACAAA AAAAAAAAAA AAAAA

75

SEQ ID NO:134 PFH5 Protein sequence:  
Protein Accession #: NP\_001132.1

1 11 21 31 41 51  
MAEVRVST GEAFGAGTWD KVSIVGTR GESPLPLDN LGKEFTAGAE EDQVTLPED 60  
VGRVLLRVH KAPFVPLLG PLAPDAWFCR WFQLTPRGG HLLFCYQWL EGAGTLVLQE 120  
GTAKVSWADH HPLVQQQEQE ELQARQEMYQ WKAYNPGWPH CLDEKTVEDL ELNIKYSTAK 180

NANFYLQAGS AFAEMKIKGL LDRKGLWRSI NEMKRIENFR RTPAAEHAFH HWQEDAFFAS 240  
 QFLNGLNPVL IRRCHYLPKN FPVTDAMVAS LLGPGTSLQA ELEKGSFLV DHGILSGIQT 300  
 NVINGKQFQS AAPMTLLYQS PGCGLPLLA IQLSQTPGPN SPIFLPTDDK WDWLLAKTWV 360  
 RNAEFSFHEA LTHLLHSHLL PEVFTLATLR QLPCHPLFK LLIPHTRYTL HINTLARELL 420  
 IVPQGVVDRS TGIGIEFSE LIQRNMKQLN YSLLCLPEDI RTRGVEDIPG YYYRDDGMQI 480  
 WGAVERFVSE IIGIYPSDE SVQDDRELQA WVREIFSKGF LNQESSGIPS SLETRREALVQ 540  
 YVTMVIPTCS AKHAAVSAGQ FDSCAWMPNL PPSMQLPPPT SKGLATCBGF IATLPPVNAT 600  
 CDVLALWLL SKPEGDQRLP GTYPDEHFE EAPRRSIATP QSRLAQISRG IQERNRGLVL 660  
 PITYLDPPLI ENSVSI

## SEQ ID NO:135 PFH4 DNA SEQUENCE

Nucleic Acid Accession #: NM\_002742

Coding sequence: 236-2974 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
 GAATTCCTTC TCTCCTCTC CTGCGCCTTC TCTCGCCCT CTTCTCTCTC CTCGCCCTCC 60  
 CTTCCCGATC CTATCCCTCT TCGCCTCCCC CAGGCCAGGG ACTTTTCGGG AAAGTTTITA 120  
 TTTTCCGTCT GGCTCTCGG AGAAAGAAGC TCTTGGCTCA GCGGCTGCAA AACTTTCCTG 180  
 CTGCGCGGCC GCCAGCCCC GCGCTCCGCT GCGCGGCCCT GCGCCCCGCC GAGCGATGAG 240  
 CGCCCTCCCG GTCTCGGGC CGCCAGTCC GCTGCTGCC GTGCGCGCGG CAGCTGCCGC 300  
 AGCGGCGGCC GCATCTGTCC CAGGCTCCGG GCGCGGGGCC GCGCGGTCTT TGGCTCCTGT 360  
 CGCGGCGGCC GTGCGGGGCA TCTGTTCCA TCTGCAGATC GGCCTGAGCC GTGAGCGCGT 420  
 GCTGCTGCTG CAGGACTCGT CCGGGGACTA CAGCCTGGCG CAGTCCGCG AGATGGCTTG 480  
 CTCCATTGTC GACCAAGAAT TCCCTGAATG TGGTTCTAC GGAATGTATG ATAAGATCCT 540  
 GCTTTTTCGC CATGACCTTA CCTCTGAAAA CATCCTTCAG CTGGTGAAAG CGGCCAGTGA 600  
 TATCCAGGAA GCGCATCTTA TTGAAGTGGT CTGTCAAGT TCCGCCACCT TTGAAGACTT 660  
 TCAGATTCGT CCCCACGCTC TCTTGTGTTA TTCATACAGA GCTCCAGCTT TCTGTGATCA 720  
 CTGTGGAGAA ATGCTGTGGG GGCTGGTACG TCAAGGTCTT AAATGTGAAG GGTGTGGTCT 780  
 GAATTACCAT AAGAGATGTG CATTTAAAT ACCCAACAAT TGCAGCGGTG TGAGGCGGAG 840  
 AAGGCTCTCA AACGTTTCCC TCACTGGGGT CAGCAACATC CGCACATCAT CTGCTGAAC 900  
 CTCTACAAAT GCCCTGATG AGCCCTCTCT GCAAAAAATCA CCATCAGAGT CGTTTATTTG 960  
 TCGAGAGAAG AGGTCAAAAT CTCAATCATA CATTGGAAGA CCAATTACCC TTGACAAGAT 1020  
 TTTGATGTCT AAATGTAAG TGCGGCACAC ATTTGTCTAT CACTCTACA CCGGCGCCAC 1080  
 AGTGTGCCAG TACTGCAAGA AGCTTCTGAA GGGGCTTTTC AGGCAGGGCT TGCAGTGCAA 1140  
 AGATTGCAGA TTCAACTGCC ATAAACGTTG TGCACCGAAA GTACCAAAACA ACTGCCTTGG 1200  
 CGAAGTGACC ATTAATGGAG ATTTCCTTAG CCTGGGGGCA GAGTCTGATG TGGTCATGGA 1260  
 AGAAGGGAGT GATGACAAAT ATAGTGAAAG GAACAGTGGG CTCATGGATG ATATGGAAGA 1320  
 AGCAATGGTC CAAGATGCAG AGATGGCAAT GGCAGAGTGC CAGAACGACA GTGGCGAGAT 1380  
 GCAAGATCCA GACCCAGACC ACGAGGACGC CAACAGAACC ATCAGTCCAT CAACAAGCAA 1440  
 CAATATCCCA CTATGAGGG TAGTGAGTC TGTCAAACAC ACGAAGAGGA AAAGCAGCAC 1500  
 AGTCATGAAA GAAGGATGGA TGGTCCACTA CACCAGCAAG GACACGCTGC GGAACCGGCA 1560  
 CTATTGAGAA TTGATAGCA AATGTATTAT CCTCTTTCAG AATGACACAG GAAGCAGGTA 1620  
 CTACAAGGAA ATGCTCTTAT CTGAAATTTT GTCTCTGGAA CCACTAAAAA CTTCACTTT 1680  
 AATTCCTAAT GTGGCCAAAT CTCAATGTTT CGAAATCACT ACGGCAATG TAGTGATTA 1740  
 TGTGGGAGAA AATGTGGTCA ATCCTTCCAG CCAATCACA AATAACAGTG TTCTCAACAG 1800  
 TGGCGTTGGT GCAGATGTTG CCAGGATGTT GGAGATAGCC ATCCAGCATG CCTTATGCC 1860  
 CGTCAATCCC AAGGCTCCTT CCGTGGGTAC AGGAACCAAC TTGCACAGAG ATATCTCTGT 1920  
 GAGTATTTCA GTATCAAAAT GCCAGATTTA AGAAATATGT GACATCAGCA CAGTATATCA 1980  
 GATTTTCTGT GATGAAGTAC TGGGTTCTGG ACAGTTTGGG ATTGTTATG GAGGAAAAA 2040  
 TCGTAAAAA GGAAGAGATG TAGTATTAAT AATCATGAC AAATTACGAT TTCAACAAA 2100  
 ACAAGAAAGC CAGCTTGTGA ATGAGGTTGC AATTCTACAG AACCTTCATC ACCCTGGTGT 2160  
 TGTAAATTTG GAGTGATGT TTGAGACGCC TGAAAGAGTG TTTGTTGTTA TGGAAAAACT 2220  
 CCATGGAGAC ATGCTGGAAA TGATCTGTCT AAGTGAAAG GGCAGGTTGC CAGAGCAT 2280  
 AACGAAGTTT TTAATTACTC AGATACTCGT GGCTTTGCGG CACCTTCATT TAAAAATAT 2340  
 CGTTCACGTG GACCTCAAC CAGAAAAATG GTTGCTAGCC TCAGTGTATC CTTTCTCTCA 2400  
 GGTGAAACTT TGTGATTTTG GTTTGCCCC GATCATTTGA GAGAAGTCTT TCCGGAGGTC 2460  
 AGTGGTGGGT ACCCCCGCTT ACCTGGCTCC TGAGGTCTTA AGGAACAAGG GCTACAATCG 2520  
 CTCTCTAGAC ATGTGGTCTG TTGGGGTCTAT CATCTATGTA AGCCTAAGCG GCACATTC 2580  
 ATTTAATGAA GATGAAGACA TACAGCAACA AATTCAGAAT GCAGCTTTCA TGTATCCACC 2640  
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 AAAAAAGACA AAGCGCTACA GTGTGGATAA GACCTTGAGC CACCTTTGGC TACAGGACTA 2760  
 TCAGACCTGG TTAGATTGCG GAGAGCTGGA ATGCAAAATC GGGGAGCGCT ACATCACCCA 2820  
 TGAAAGTGAT GACCTGAGGT GGGAGAAGTA TGCAGGCGAG CAGCGGCTGC AGTACCCAC 2880  
 ACACTCATG ATACCAAGTG CTAGCCACAG TGACACTCTC GAGACTGAAAG AAACAGAAAT 2940  
 GAAAGCCCTC GGTGAGCGTG TCAGCATCTC CTGAGTTCCA TCTCTATAA TCTGTCAAAA 3000  
 CACTGTGGAA CTAATAAATA CATAAGGTCA GGTTTAATAT TTGCTTGCA GAACTGCCAT 3060  
 TATTTCTGT CAGATGAGAA CAAAGCTGTT AAATGTTAG CACTGTTGAT GTATCTGAGT 3120  
 TGCCAAGACA AATCAACAGA AGCATTGTA TTTGTGTGA CCACTGTGT TGTATTAACA 3180  
 AAAGTTCCCT GAAACACGAA ACTTGTATT GTGAATGATT CATGTTATAT TTAATGCATT 3240  
 AAACCTGTCT CCACTGTGCC TTTGCAAAAT AGTGTTTTTC TTAAGTGGAG TCAATTTTGG 3300  
 TAAGAGACAG AATGATCTCT TGAAGTAGTT CTGTTGGTG TGTCCATTG GTGTGTCTAT 3360  
 TGTAAACAAA CTCTTGAGA GTGATATT TCCAGTGTTC TATGAACAAC TCCAAAAACC 3420  
 ATGTGGGAAA AAAATGAATG AGGAGGGTAG GGAATAAAAT CTAAGACAC AAATGCATGA 3480  
 ACAAGTTTAT ATGTATGATT TTGAATCTTT TCGCTGCTG GTGTGCTCA GTATATTAA 3540  
 ACTCAAGACA ATGCACCTAG CTGTGCAAGA CTAAGTGTCT TTAAGCCTAA ATGCCTTGA 3600  
 AATGTAACT GCCATATATA ACAGATACAT TTCCCTCTTT CTTATAATAC TCTGTTGATC 3660



TATGGAAAAT CAGCTGCTCA GCAACCTTTC ACCTTTGTGT ATTTTTCAT AATAAAAAAT 3720  
ATTCITGTCA AAAAAAAAAA AA

5 SEQ ID NO:136 PFH4 Protein sequence:  
Protein Accession #: NP\_002733.1

10 1 11 21 31 41 51  
MSAPPVLRPP SP LLPVAAAA AAAAAALVPG SGPAPFLA PVAAPVGGIS FHLQIGLSRE 60  
PVLLQDSSG DYSLAHVREM ACSVDQKFP ECGFYGYMDK ILLFRHDPST ENILQLVKAA 120  
SDIQEGDLIE VVLSRSATFE DFQIRPHALF VHSYRAPAFD DHCGEMLWGL VRQGLKCEGC 180  
GLNYHKRCAP KIPNCSGVR RRRLSNVSLT GVSITRTSSA ELSTAPDEP LLQKSPSESF 240  
15 IGRKRSNSQ SYIGRPHLD KILMSKVVP HTFVIHSYTR PTVQCYCKKL LKGLFRQGLQ 300  
CKDCRFNCHK RCAPKVPNNC LGEVTINGDL LSPGAESDVV MEEGSDNDNS ERNSGLMDDM 360  
EEAMVQDAEM AMAEQNDSDG EMQDPDPDE DANRTISPST SNNIFLMRVV QSVKHTKRKS 420  
STVMKEGWMV HYTSKDTLRK RHYWRDLSKC ILLFQNDTGS RYKKEIPLSE ILSLEPVKTS 480  
20 ALIPNGANPH CFEITANVV YYVGENVVPN SSPSPNNSVL TSGVQADVAR MWEIAIQHAL 540  
MPVIPKSSV GTGTNLHRDI SVSISVSNQC IQENVDISTV YQIFDEVLG SGQFGIVYGG 600  
KHKRTGRDVA IKIDKLRFP TKQESQLRNE VAILQNLHP GVVNLECMFE TPERFVVMSE 660  
KLHGDMLEMI LSSEKGRLEP HITKFLITQI LVALRHLHFK NIVHCDLKE NVLLASADPF 720  
PQVKLCDDFG ARIGESKFR RSVVGTAPYL APEVLRNKG YNRSLDMWSVG VITYVSLSGT 780  
25 PFNEDEDIH DQIQNAAFMY PPNPWKEISH EADLINLL QVKMRKRYSV DKTLSHPWLQ 840  
DYQTWDLRE LECKIGERYI THESDDLWE KYAGEQLQY PTHLNPAS ESDTPETEET 900  
EMKALGERVS IL

30 SEQ ID NO:137 PFH3 DNA SEQUENCE

Nucleic Acid Accession #: X85425  
Coding sequence: 712-3825 (underlined sequences correspond to start and stop codons)

35 1 11 21 31 41 51  
AATGGTCAGT CAATACATTA TAACATAATA CACCAATGC TAGAATAGAA GGGGAGGGGG 60  
GCACACATAA TGACTCACTG CTGGAAGAAG GGTGCATCAG TGAATTAATA AATGTCCCTC 120  
CCCTCTTCAG CACTCAGCGC GCAGCTATTT CCTTCTGCCA GTCTCTTTGA ACTCTGGATC 180  
TTTGCTTTTG CTGCGTGCTC TCTGTGTTTT CATTTCTCAC ATTTTCTCAA TCTCTTTCT 240  
40 TTATCCTTAG CCACCTCGCT TTTTCTCTC TTTTAAAAA AATCGGAGAT TTGCTCTTAA 300  
AATGATTTGT CTTCCTTACC TCGTCCATT TCAACACTGA AGGCTGCAAA GAACTTCACC 360  
TTTCCCTTAG TGGATTTTAA AATTTCTCAA TCGTAAAAA GTCTTTTGA AAGGCAAGG 420  
AACAGGACCC AGACCTCTC GACACCTTG ATCCGAGTCA GATCTGCACT AGCAACCAGA 480  
ACTAATATTT CATTTAACCC ACCAAAAGGG GGAGGCGAGA GGAGCCAGAA GCAAACTTCA 540  
45 TCTGTCTCAG ACGGATCGGT GGTTCCTACA TTTGGAGGAG CCGCGTGTC GAAGGCGTAG 600  
GACCCCAAGG GGGGACAAGG AGGACTCCCG AGTCTCCCTT CTCCGCTCTC CGAGACCGAA 660  
GAGGTGGACT GAGCGGCTG GGACAGCGGC ACCGAGGAG GCTCGGAGAA GATGCGGGGC 720  
TCGGGGCCCC GGGGTGCGGG ACACCGCGCG CCCCCAAGCG GCGGCGGCGA CACCCCCATC 780  
ACCCAGCGT CCTGCGCGG CTGCTACTCT GCACTCGAC GGGCTCCCTT CTGGACGTGC 840  
50 CTTCCTCGT GCGCGCACT CCGGACCTC CTGGCCAGCC CCAGCAACGA AGTGAATTTA 900  
TTGGATTACG GCACTGTCTT GGGGGAACCT GGTATGGATT CTITTCACAA AAATGGGTGG 960  
GAAGAGACTG TGAAGTGGG TGAATAATTAT GCGCTATCC ACACATACCA AGTATGCAAA 1020  
GTGATGGAAG AGAATCAGAA TAACTGGCTT TTGACCAATT GATCTCCAA TGAAGGTGCT 1080  
TCCAGAACTT TCATAGAACT CAAATTTACC CTGCGGACT GCAACAGCTT TCTGGAGGA 1140  
55 CTGGGGACCT GTAAGGAAAC CTTAATATG TATTACTTTG AGTCAGATGA TCAGAAATGG 1200  
AGAAACATCA AGGAAACCA ATACATCAAA ATTGATACCA TTGCTGCCGA TGAAGCTTT 1260  
ACAGAACTTG ATCTGTGGTA CCGTGTATG AAACGTGAATA CAGAGGTGAG AGATGTAGGA 1320  
CCTCTAGCA AAAAGGGATT TTATCTTGCT TTCAAGATG TTGGTGCTTG CATGTCTCTG 1380  
60 GTTCTGTGCA TGATATACCT TAAAAAATGC CCTCTGTGG TACGACACTT GGCTGTCTTC 1440  
CTGACACCA TCACTGGAGC TGATCTTCC CAATTGCTCG AAGTGTGAGG CTCTGTGTTC 1500  
AACCATTCTG TGACCGATGA ACCTCCAAA ATGCACTGCA GCGCCGAAGG GGAGTGGCTG 1560  
GTGCCCATCG GGAATGCA GTGCAAGGCA GGATATGAAG AGAAAAATGG CACCTGTCAA 1620  
GTGTGAGAG CTGGGTTCTT CAAAGCCTCA CCTCACATCC AGAGCTGCGG CAAATGTCCA 1680  
65 CCTCACAGT ATACCATGA GGAAGCTTCA ACCTCTGTG TCTGTGAAAA GGATTATTTT 1740  
AGGAGAGAGT CTGATCCACC CACAATGGCA TGCACAAGAC CCCCCTCTGC TCTCGGAAT 1800  
GCCATCTCAA ATGTTAATGA AACTAGTGT TTTCTGGAAT GGATTCGGCC TGCTGACACT 1860  
GGTGAAGGA AAGAGGTGT ATATTATAT GCATGCAAGA AGTGCAACT CCATGCAGGT 1920  
GTGTGTGAGG AGTGTGGGG TCATGTGAGG TACCTTCCC GGCAGGCGG CCTGAAAAAC 1980  
70 ACCTCTGCTA TGATGTGGGA TCTACTGCT CACACAACT ATACCTTTGA GATTGAGGCA 2040  
GTGAATGGAG TGTCCGACT GAGCCAGGA GCGCGGAGT ATGTGTCTGT AAATGTAACC 2100  
ACAAATCAAG CAGCTCCATC TCCAGTCACC AATGTGAAAA AAGGAAAAAT TGCAAAAAAC 2160  
AGCATCTCTT TGTCTTGGCA AGAACCAGAT CGTCCCAATG GAATCATCCT AGAGTATGAA 2220  
ATCAAGCATT TTGAAAAAGG CCAAGAGACC AGCTACACGA TTATCAAAAT TAAAGAGACA 2280  
ACTATTACTG CAGAGGCTT GAAACAGCT TCAGTTTATG TCTTCCAAAT TCGAGCACGT 2340  
75 ACAGCAGCAG GCTATGGTGT CTTCAGTGA AGATTGAGT TTGAAACCA CCAAGTGTGT 2400  
GCAGCATCCA GCGATCAAG CCAGATTCTT GTAATTGCTG TGTCTGTGAC AGTAGGAGTC 2460  
ATTTGTGTGG CAGTGGTTAT CCGCGTCTC CTCAGTGGAA GTTCTGCGA ATGTGGCTGT 2520  
GGGAGGCGCT CTTCCTGTG CGTGTGTGCC CATCAATCC TAATATGGCG GTGTGGCTAC 2580  
AGCAAGACAA AACAAGATCC AGAAGAGGAA AAGATGCATT TTCATAATGG GCACATTAAA 2640



CTGCCAGGAG TAAGAACTTA CATTGATCCA CATACCTATG AGGATCCCAA TCAAGCTGTC 2700  
 CACGAATTTG CCAAGGAGAT AGAAGCATCA TGTATCACC A TTGAGAGAGT TATTGGAGCA 2760  
 GGTGAATTTG GTGAAGTTTG TAGTGGACGT TTGAACTAC CAGGAAAAAG AGAATTACCT 2820  
 GTGGCTATCA AAACCCCTAA AGTAGGCTAT ACTGAAAAGC AACGCAGAGA TTCTCTAGGT 2880  
 5 GAAGCAAGTA TCATGGGACA GTTGTATCAT CCTAACATCA TCCATTAGA AGGTGTGGTG 2940  
 ACCAAAAGTA AACCAAGTAT GATCGTGACA GAGTATATGG AGAATGGCTC TTTAGATACA 3000  
 TTTTGAAGA AAAACGATGG GCAGTTCACT GTGATTCAGC TTGTTGGCAT GCTGAGAGGT 3060  
 ATCTCTGCAG GAATGAAGTA CCTTCTGAC ATGGGCTATG TGCATAGAGA TCTTGCTGCC 3120  
 10 AGAAACATCT TAATCAACAG TAACCTGTG TGCAAAAGTG CTGACTTTGG ACTTCCCGG 3180  
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 TGGACTGCC CAGAAGCAAT AGCTTCCGA AAGTTTACTT CTGCCAGTGA TGTCTGGAGT 3300  
 TATGGAATAG TAATGTGGGA AGTTGTGTCT TATGGAGAGA GACCCACTG GGAGATGACC 3360  
 AATCAAGATG TGATTAAAGC GGTAGAGGAA GGCTATCGTC TGCCAAGCCC CATGGATTGT 3420  
 15 CCGTCTGCTC TCTATCAGT AATGCTGGAT TGCTGGCAGA AAGAGCGAAA TAGCAGGCC 3480  
 AAGTTTGAT AATATGTCAA CATGTTGGAC AAGCTGATAC GTAACCAAG TAGTCTGAAG 3540  
 ACGCTGGTTA ATGCATCTG CAGAGTATCT AATTATTGG CAGAACATAG CCCACTAGGA 3600  
 TCTGGGCGCT ACAGATCAGT AGGTGAATGG CTAGAGGCAA TCAAGATGGG CCGGTATACA 3660  
 GAGATTTTCA TGGAAAAATG ATACAGTTCA ATGGACGCTG TGGCTCAGGT GACCTGGAG 3720  
 20 GATTGAGAC GCGTTGAGT GACTCTTGT GGTCAACAGA AGAAGATCAT GAACAGCCTT 3780  
 CAAGAAATGA AGGTGCGCT GTAAACGGA ATGGTGCCAT TGTAACTTCA TGTAAATGTC 3840  
 GCTTCTCAA GTGAATGATT CTGCACCTTG TAAACAGCAC TGAGATTAT TTAACAAAA 3900  
 AAA

SEQ ID NO:138 PFH3 Protein sequence:  
 Protein Accession #: CAA84700.1

1 11 21 31 41 51  
 MRGSGPRGAG HRRPSSGGGD TPITPASLAG CYSAPRRAPL WTCLLLCAAL RTLLASPSNE 60  
 VNLLDSRTVM GDLGWIAFPK NGWEEIGVD ENYAPIHTYQ VCKVMBQNN NWLLTSWISN 120  
 35 EGASRIFFEL KFTLRDCNSL PGGLGTCKET FNMYYFESDD QNGRNIKENQ YIKIDTIAAD 180  
 ESTFELDLDG RVMKLNTEVR DVGPLSKKGF YLAFQDVGAC IALVSVRVYY KKCPSVVRHL 240  
 AVFFDITIGA DSSQLLEVSG SCVNHSTDE PPKMHCSAEG EWLVPIGKCM CKAGYEEKNG 300  
 TCQVCRPGFF KASPHIQSCG KCPHYSYTHE EASTSCVCEK DYFRRESDFP TMACTRPFA 360  
 PRNAISNVNE TSVFLEWIPP ADTGGRKDV YIACKKCNH HAGVCECGG HVRYLPRQSG 420  
 40 LKNTSVMVDV LLAHTNYTFE IEAVNGVSDL SPGARQYVSV NVTTNQAAPS PVTNVKKGKI 480  
 AKNSISLSWQ EPDRPNGLU EYEIKHFEKD QETSYTIKS KETTITAEGL KPASVYVFQI 540  
 RARTAAQYGV FSRREFEFT PVFAASSDQS QIPVAVSVT VGVILLAVVI GVLLSGSCCE 600  
 CGGRASSLC AVARFILWR CGYSKAKQDP EEEKMHFENG HIKLPVVRTY IDPHTYEDPN 660  
 QAVHEFAKEI EASCITIERV IGAGEFGEVC SGRLLKPKGR ELPVAIKTLK VGYTEKQRRD 720  
 45 FLGEASIMQD FDHPNIHLE GVVTKSKPVM IVTEYMENG LDTHLKNKG QFTVIQLVGM 780  
 LRGISAGMKY LSDMGYVHRD LAARNILNS NLVCKVSDFG LSRVLEDDPE AAYTTRGGKI 840  
 PIRWTAPEAI AFRKFTASD VWSYGIWME VVSYGERPYW EMTNQDVKA VEEGYRLPSP 900  
 MDCTAALYQL MLDCTWQERN SRPKFDEIVN MLDKLRNPS SLKTLVNASC RVSNLLAEHS 960  
 50 PLGSGAYRSV GEWLEAKMG RYTEIFMENG YSSMDAVAQV TLEDLRLGV TLVGHQKKIM 1020  
 NSLQEMKVQL VNGMVPL

# SEQ ID NO:139 PFH2 DNA SEQUENCE

55 Nucleic Acid Accession #: NM\_016029  
 Coding sequence: 78-1097 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
 60 CTGCGATCCC GCAGGGCAGC GACGCGACTC TGGTGGGGC CGTCTCTTC CCCCGAGCT 60  
 GGGCGTGGC GGCAGCAATG AACTGGGAGC TGCTGCTGTG GCTGCTGGTG CTGTGGCGGC 120  
 TGCTCTGCT CTGTGTGAGC CTGCTGCGCT TCCTGAGGGC TGACGGCGAC CTGACGCTAC 180  
 TATGGGCGA GTGGCAGGGA CGACGCCAG AATGGGAGCT GACTGATATG GTGGTGTGGG 240  
 65 TGACTGGAGC CTCGAGTGGA ATTGGTGAGG AGCTGGCTTA CCACTGTCT AACTAGGAG 300  
 TTTCTCTGT GCTGTCAACC AGAAGAGTGC ATGAGCTGGA AAGGGTGAAA AGAAGATGCC 360  
 TAGAGAATGG CAATTAAAAA GAAAAAGATA TACTTGTITT GCCCTTGAC CTGACGACA 420  
 CTGGTCCCA TGAAGCGGCT ACCAAGCTG TTCTCCAGGA GTTGTGTAGA ATCGACATTC 480  
 TGGTCAACAA TGGTGGGAAT TCCACGCGT CTCTGTGATC GGATACCAAGC TTGGATGTCT 540  
 70 ACAGAAAGCT AATAGAGCTT AACTACTTAG GGAAGGTGTC CTGACAAAAA TGTGTTCTGC 600  
 CTCACATGAT CGAGAGGAAG CAAGGAAAGA TTGTTACTGT GAATAGCATC CTGGGTATCA 660  
 TATCTGTACC TCTTTCCATT GGATACTGTG CTAGCAAGCA TGCTCTCCGG GGTITTTTIA 720  
 ATGGCCTTGG AACAGAACTT GCCACATACC CAGGTATAAT AGTTTCTAAC ATTTGCCAG 780  
 GACCTGTGCA ATCAATATTT GTGGAGAATT CCTAGCTGG AGAAGTCACA AAGACTATAG 840  
 75 GCAATAATGG AGACCAAGTCC CACAAGATGA CAACCAAGTC TTGTGTGCGG CTGATGTTAA 900  
 TCAGCATGGC CAATGATTTG AAAGAAGTTT GGATCTCAGA ACAACCTTTC TTGTAGTAA 960  
 CATATTTGTG GCAATACATG CCAACCTGGG CTGGTGGAT AACCAACAAG ATGGGGAAGA 1020  
 AAAGGATGGA GAACCTTAAG AGTGGTGTGG ATGCAGACTC TTTTATTTT AAAATCTTTA 1080  
 AGACAAAAAC TGACTGAAAA GAGCACTGT ACTTTTCAAG CCACTGGAGG GAGAAATGGA 1140  
 AAACATGAAA ACAGCAATCT TCTTATGCTT CTGAATAATC AAAGACTAAT TTGTGATTTT 1200

ACTTTTAAAT AGATATGACT TTGCTTCCAA CATGGAATGA AATAAAAAAT AAATAATAAA 1260  
AGATTGCCAT GAATCTTGCA AA

5

SEQ ID NO:140 PFH2 Protein sequence:  
Protein Accession #: NP\_057113.1

10 1 11 21 31 41 51  
| | | | |  
MNWELLWLL VLCALLLLLV QLLRFLRADG DLTLLWAEWQ GRRPEWELTD MVVWVTGASS 60  
GIGEELAYQL SKLGVSLVLS ARRVHELERY KRRCLENGNI KEKDILVPL DLTDTGSHEA 120  
ATKAVLQEFGR RIDLVNNGG MSQSLCMDT SLDVYRKLE LNYLGTVSLT KCVLPHMIER 180  
KQGGKIVTVNS ILGIISVPLS IGYCASKHAL RGFENGLRTE LATYPGIIVS NICPGPVQSN 240  
15 IVENSLAGEV TKTIGNNGDQ SHKMTTSRCV RLMLISMAND LKEVWISEQP FLVVTYLWQY 300  
MPTWAWWITN KMGKKRIENF KSGVDADSSY FKIFKTKHD

20

SEQ ID NO:141 PFH1 DNA SEQUENCE

Nucleic Acid Accession #: NM\_021614  
Coding sequence: 1-1740 (underlined sequences correspond to start and stop codons)

25 1 11 21 31 41 51  
| | | | |  
ATGAGCAGCT GCAGGTACAA CGGGGGCGTC ATGCGGCGCG TCAGCAACTT GAGCGCGTCC 60  
CGCCGGAACC TGCACGAGAT GGACTCAGAG GCGCAGCCCG TCAGCCCGCC CGCGTCTGTC 120  
GGAGGAGGTG GCGGCGCGTC CTCCCGTCT GCAGCGCGCTG CCGCGGCGCG CGCTGTTTCG 180  
TCCTCAGCCC CGAGATTCGT GGTGTCTAAG CCCGAGCACA ACAACTCCAA CAACCTGGCG 240  
30 CTCTATGGAA CCGGCGCGCG AGGCAGCACT GGAGGAGCGG GCGGCGGTGG CGGGAGCGGG 300  
CACGGCAGCA CGAGTGGCAC CAAGTCCAGC AAAAAGAAAA ACCAGAACAT CGGCTACAAG 360  
CTGGGCCACC GGGCGGCCCT GTTCGAAAAG CGCAAGCGCG TCAGCGACTA CGCGCTCATC 420  
TTGGGATGT TCGGCATGTG GTTCATGGTC ATCGAGACCG AGCTGTCTG GGGCGCCTAC 480  
GACAAGGCGT CGCTGTATTC CTTAGCTCTG AAATGCCTTA TCAGTCTCTC CACGATCATC 540  
35 CTGCTCGGTC TGATCATCGT GTACCAGCC AGGGAATAC AGTTGTTCAT GGTGGACAAT 600  
GGAGCAGATG ACTGGAGAAT AGCCATGACT TATGAGCCTA TTTTCTTCAT CTGCTTGGAA 660  
ATACTGGTGT GTGCTATTCA TCCCATACCT GGGAAATTATA CATTACATG GACGGCCCGG 720  
CTTGGCTTCT CTTATGCCCC ATCCACAACC ACCGCTGATG TGGATATTAT TTTATCTATA 780  
CCAATGTCTT TAAGACTCTA TCTGATTGCC AGAGTCATGC TTTTACATAG CAAACTTTTC 840  
40 ACTGATGCTT CCTCTAGAAG CATTGGAGCA CTTAATAAGA TAAACTTCAA TACACGTTTT 900  
GTTATGAAGA CTTTAATGAC TATATGCCCA GGAACGTGAC TCCTGGTTTT TAGTATCTCA 960  
TTATGGATAA TTGCCGCATG GACTGTCCGA GCTTGTAATA GGTACCATGA TCAACAGGAT 1020  
GTTACTAGCA ACTTCTCTGG AGCGATGTGG TTGATATCAA TAACCTTTCT CTCCATTGGT 1080  
TATGGTGACA TGGTACCTAA CACATACTGT GAAAAGGAG TCTGCTTACT TACTGGAATT 1140  
45 ATGGGTGCTG GTTGCACAGC CTTGGTGTA GCTGTAGTGG CAAGGAAGCT AGAAGTTACC 1200  
AAAGCAGAAA AACACGTGCA CAATTTCATG ATGGATACTC AGCTGACTAA AAGAGTAAAA 1260  
AATGCAGCTG CCAATGTACT CAGGGAACA TGGCTAATT ACAAAAATAC AAAGTAGTGT 1320  
AAAAAGATAG ATCATGCAAA AGTAAGAAAA CATCAACGAA AATTCTGCA AGCTATTTCAT 1380  
CAATTAAGAA GTGTAAAAAT GGAGCAGAGG AAAGTGAATG ACCAAGCAAA CACTTTGGTG 1440  
50 GACTTGGCAA AGACCCAGAA CATCATGTAT GATATGATT CTGACTTAAA CGAAAGGAGT 1500  
GAAGACTTCG AGAAGAGGAT TGTAACCTG GAAACAAAAC TAGAGACTTT GATTGGTAGC 1560  
ATCCAGCCCG TCCTGGGCT CATAAGCCAG ACCATCAGGC AGCAGCAGAG AGATTTCATT 1620  
GAGGCTCAGA TGGAGAGCTA CGACAAGCAC GTCACCTACA ATGCTGAGCG GTCCCGGTCC 1680  
55 TCGTCCAGGA GCGCGCGGTC CTCTCCACA GCACCACCA CTTCATCAGA GAGTAGCTAG

SEQ ID NO:142 PFH1 Protein sequence:  
Protein Accession #: NP\_067627

60 1 11 21 31 41 51  
| | | | |  
MSSCRYNGGV MRPLSNLSAS RRNLHEMDSE AQLQPPASV GGGGASSPS AAAAAAAVS 60  
SSAPEIVVSK PEHNNSNLA LYGTGGGGST GGGGGGGSG HGSSSGTKSS KKKQNIGYK 120  
65 LGHRRALFEK RKRLSDYALI FGMFGIVVMV IETELSWGAY DKASLYSLAL KCLISLSTII 180  
LLGLIIVYHA REIQLFMVDN GADDWRIAMT YERIFFICLE ILVCAIHPG GNYTFTWTAR 240  
LAFSYAPSTT TADVDIILSI PMFLRLYLIA RVMILLHSKLF TDASSRSIGA LNKINFNTRF 300  
VMKLTMTCP GTVLLVFSIS LWIAAWTVR ACERYHDQDD VTSNFGAMW LISTFLSIG 360  
YGDMPVNTYC GKGVCLLTGI MGAGCTALVV AVVARKLELT KAEKHVHNFMD MDTQLTKRVK 420  
70 NAAANVLRET WLKYKNTKLV KKIDHAKVRK HQRKFLQAIH QLRSVKMEQR KLNDQANTLV 480  
DLAKTQNMRY DMISDLNERS EDFEKRIVTL ETKLETIGS IHALPGLISQ TIRQQQRDFI 540  
EAQMESYDKH VTYNAERSRS SSRRRSSST APPTSSESS

75

SEQ ID NO:143 PFG9 DNA SEQUENCE

Nucleic Acid Accession #: AL110139, coding region is FGENSEH predicted  
Coding sequence: 1-1896 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51

5  
 10  
 15  
 20  
 25  
 30  
 35

| | | | |  
 ATGCGGCGCG TGCCTGTGCC GCGCCGCTC CTGCGGCTGC TGCTGCTCGC GCTCCTGGCC 60  
 GCTCCGCGCG CCGCGGCCAG CAGAGCCGAG TCCGTCTCCG CCGCGTGGCC CGAACCCGAG 120  
 CGCGAGTCCG GCGCCACCGCC CCGCCCGGGG CCGCGGAACA CCACCCGGTT TGGGTCTGGG 180  
 GCGCGGGGCG GCAGCGGCAG CTCAGCTCC AACAGCAGTG GCGACGCCIT GGTGACCCGC 240  
 ATTTCCATCC TCTCCGCGA CTAACCCACC CTCAGGCGAG CCGTGATCGT GCGGTTCGCC 300  
 TTTACCAACC TCTCATGCG CTGCTGTCTG CTGCGGCTCT TCAGGTCCGG AAAGAGGTGA 360  
 AAGAAGACAC GCAAGTATGA TATCATCAC ACTCCAGCAG AGCGAGTGA AATGGGCCCA 420  
 CTAATGAAG AGGATGATGA AGATGAGGAC TCCAGATAT TCGACATCAA ATACAGAGTG 480  
 TCCTTCCGG CTGCACTGAG ACGTCAGCTG CCAGGGTGCC AGACGCTACT GACAGTTCT 540  
 GTGCCCCAC CCTTCATCTC GACATTGAC CTTCAGCAA GATGCAGTGG AAGGCCTGAT 600  
 GGTGGAATCA GACCTGGTAA AACCTGTTTC CCAGCCTGGT GGCATCCTGT GGAAAGTTGG 660  
 TCAGCTGCAA CCTGGGGTGT GAAGGACTGG ACCTGGAAGC CCTCTTGGCT CGGAGGTGTT 720  
 GAAACCAAAA CGAACGTTAT GTATAAAACC CCAGCTCCAT CGTGCCTGTC AGGCATCTGC 780  
 TCAGACTGTC TCGTGAAGC TCGTTCCAC GTCAACCAA TGGAGTTGCT TCTGCCACCC 840  
 TTTGGGCATC CCTTTAAAGT GCGCCCTACT TCTACTCCC ATGGTTTTCG ACAACTGCAG 900  
 CTGAATCTCA TGGAAAAGCT GGATTCTCT GCTTACGCA GAAACACCCG GGTCTCATCT 960  
 GCGAGGTGCT TGCACTGGT CCTGGCAGAA ATGGCGGCTG CTGAAAGTGA CCTTCCAAAT 1020  
 CCTTGTGGGC ACTTCAGGCG CACAGGCTCT CCAATAAAAA CCCTTTACAC ACAACCATG 1080  
 AGTACCTGG GCTTGGATGT TTTCTGGT GCGGCGCAGC GGGGCACTT TGTGAAGAC 1140  
 AGAGCAGTGA CTAAGTTTCT CCAGGGTAGC TCTTTTCCA AACAGCTGCG CTGGAAGCCA 1200  
 GCGCTAGAGA GTGGGTTTCC CCATCATCTC AGGCTTCTCA GAGAGTGTCC TCGCTGAGC 1260  
 ACCCATCTTG TCAGGTGGC TCGTTCAGAT GCGCGGGGAC AAGCCAGGCT GACGGGGAGG 1320  
 AGGGTGTGTT GCGCTCGCGG GCAGTCTCTG CATGGCGGAG GGTGAGCGGG TACCGCAACT 1380  
 TGCTTTTGG TTTTGAAGAT TCTGTTGAGG CGCCATCCTC ACCTTGACCT CTCTACAAA 1440  
 ATCTGTCTCC CTGCTGTGCG CGTGGAAAC CTACGGGAAG CCAAGAGAAG CTCAGTGACT 1500  
 GTCTTGTGCT CATTTGAGCA GAGCCACAA AAGGCAGCTG CTGCCACGG GGAGCTGTC 1560  
 AAACGAGGGC CCAGTGGGCA ATTGACCAGA CACACATGCC CTGGCTGGGG GATCACACAT 1620  
 GCGAACCTCG AGACAATTCC AGATACCCAA GGCCAGGAAG GCCACGTGA GATGTCACT 1680  
 CACCTGFCG AGAGCTTGA TGGGGTGGCA AATTCTATT TGGAGGAAGA GGGTTTCCAG 1740  
 GATGGCAGAT GCCAGAAGT GGTCTGATG TCTGAGGAAG GGCCACCTAG TTTGACAGGA 1800  
 TGTGAGAGGC TCACAGGTTT CCATCACTTC TCCAGCCATT CCAAGTCTTG GTCTCTCTT 1860  
 TCCCCCGAC AGCCCTGTT TCTGTCCAG CCCTGA

## SEQ ID NO:144 PFG9 Protein sequence:

Protein Accession #: none available, FGENSEH predicted

40  
 45  
 50

| | | | |  
 1 11 21 31 41 51  
 MRVPLPAFL LPLLLALLA APAARASRAE SVSAPWPEPE RESRPPPGPG PGNTTRFGSG 60  
 AAGSGSSSS NSSGDALVTR ISILLRDLPT LKAAVIVAF FTLILLCLL LRVFRSGKRL 120  
 KTKRYKIIT TPAERVMAP LNEDEDED STVFDIKYRV SLPAALRRQL PGCTILLTVP 180  
 VPPFILDID LPARCSGRFD GGRPKTKCF PAWWHPVESW SAATWGVKDW TWKPSCVGGV 240  
 ETKINVMYKT PAFSCVSGIC SDCHWQARFH VTTMELLPP FGHFPKVPPT STPHGRQLQ 300  
 LNLMEKLDSS ALRRNTRAPS ARCLFLVLA MAEAESDLPN PWWHFSATGS PIKTLTYTQM 360  
 STLGLDVFCG AGRGRTFCD RAVTKVLQGS SFSKQLRWKP ALESGFPHL RLLRECPPLS 420  
 THFVRLARSD ARQASLTGR RVFRFRQSL HGGGSAGTAT CLLVLKILL RHPHLDLFYK 480  
 ICLPCCAVEH LREAKRSSVT VLASFQSPQ KAAAHGEPV KRGPQQLTR HTCPGWGITH 540  
 ANLQITPDQ GQEGPREDTV HPGGDLGVA NFYLEEGFQ DGRQCKMVLN SEEGPPSLTG 600  
 CERLTGSHHF SSHSKWSFL SPRQPLFLSR P

## SEQ ID NO:145 PFG6 DNA SEQUENCE

55  
 Nucleic Acid Accession #: NM\_013427  
 Coding sequence: 875-3789 (underlined sequences correspond to start and stop codons)

60  
 65  
 70  
 75

| | | | |  
 1 11 21 31 41 51  
 GGCTGGGCTG CGAATAGCGT GTTCTCTCC GCGGAACAC ACACACCCGG CCTTGGGGCT 60  
 GTCTCTGAA GCTCCCTCTC CCACGGAGAG CGCTGAGCGC CCGCGGAAT TCCATCCAC 120  
 CGTGGGCACG CAGTCTTTGG AGGTCCCGGG CGCAGCACGC TCGGTGTCC CACTGTGAG 180  
 CAAGACAGAG ACCCGCGGG AACCTTGAGC TTGGAACAAC CCTTGAGCCT CTGCACTCGG 240  
 AAGAGTGGG GCAGCAGCCC AGCGGAGGCC AGCGCGCAA CCTCGGGGCG CGGGGCAAGG 300  
 AGAGAGTGA GGGAGGCGCA GTCAGGCGC CGGCTCAGG AGCGGGAGGA AGTTCTCGCG 360  
 GCGCGGGAG CGCGGTGGAC GCGCCTGGG CGCAGCCCA GGCAGCTTC TCTTGGGCC 420  
 TCGGACTGT CTTGGGGCG CAAGGAGGAG CTGCTGGAG TCTTAGAGGC CATCCAGAGC 480  
 CAGCGAGCAG GAGCGCTGCG TCTCCGCTC CAGCTAGGAA GGGGAGTGG CGCTGGCAGG 540  
 CTGGAGCTG GAACCCAGCG AGCGCTGAC CTCTCTCTC CTCTCTGA CCTCTTCCG 600  
 GTCTTGGCT CCGGAGGAAG GTTCTAGCGG CTGCAAGGAG TCCCCAGACC CATTTTCTA 660  
 GAAGGCTGGT GATGAGTCTG CTGCTCTGC CGCGCGGGG GCACTTGGAG CGCACCGGG 720  
 GCGCGTAGC TGGGCTTTGC TCTCACCGC CCTGGGCAA CCGCGGGCA GCCCGGCTG 780  
 GCACCTTTC CTGAGTCCCT TTGGTTTCC GACCCAAAGC CACCAGGTC CAGGAGGGA 840  
 GGAGAGGTG CTGCTCAGGT GCAGCCCGC CGAGATGTC GCGCAGAGCC TGCTCCACAG 900  
 CGTCTTCTC TGTCTCTGC CCGCTTCAAG TAGCGCGGCC TCGGCAAGG GCTTCTCAA 960  
 GAGGAAGCTG CGCCAGAGCC GCAGCTGGA CCGGCGCTG ATCGCGGCT GCGGAGGCGA 1020  
 CGAGCGGGG CGGGAGGGCA GTGCGCGGG AGCCACGGG GCGCGCTCT ACTCCCATC 1080  
 ACTCCAGCC GAGAGTCTG GCGCTCGCT GCGTCTCTT TCCCGGGTC GCGCCCCAG 1140  
 GGCACACAG CTACCGCTC CTGGACTCT TTGCTGTC TCTCCACAC CCAGCACCC 1200

5 GCAGGAGAAG TCACCATCCG GCAGCTTTCA CTTTGACTAT GAGGTTCCCG TGGGTGCGGG 1260  
CGGCTCAAG AAGAGCATGG CCTGGGACCT GCCTTCTGTC CTGGCCGGGC CAGCCAGTAG 1320  
CCGAAGCGCT TCACGATCC TCTGTTATC CGGGGGAGGC CCCAATGGCA TCTTGGCTTC 1380  
TCCTAGGAGG TGGCTCCAGC AGAGGAAGTT CCAGTCCCCA CCCGACAGTC GCGGGCACCC 1440  
CTACGTGCTG TGGAAATCCG AGGGTGATT CACCTGGAAC AGCATGTCTAG GCGCAGTGT 1500  
GCGGCTGAGG TCAGTCCCA TCAGAGTCT CTCAGAGCTG GAGAGGGCCC GGCTGCAGGA 1560  
AGTGCCCTTT TATCAGTTGC AACAGGACTG TGAOCTGAGC TGTGATCA CCATTCCCA 1620  
AGATGGACAA AAGAGAAAGA AATCTTTAAG AAAGAACTG GATTCACTAG GAAAGGAGAA 1680  
10 AAACAAGAC AAAGAAATCA TCCACAGGC ATTTGGAATG CCCTTATCC AAGTCATTGC 1740  
GAATGACAGG GCCTATAAAC TCAAGCAGGA CTTCAGAGG GACGAGCAGA AAGATGCATC 1800  
TGACTTTGTG GCTTCCCTCC TCCATTGG AAATAAAGA CAAAACAAAG AACTCTCAAG 1860  
CAGTAATCA TCTCTCAGCT CAACCTCAGA AACACCGAAT GAGTCAACGT CCCCACAC 1920  
CCCGGAACCG GCTCCTCGGG CTAGGAGGAG GGGTGCCATG TCAGTGGATT CTATACCGA 1980  
TCTTGATGAC AATCAGTCTC GACTACTAGA AGCTTTACAA CTTCCTTGC CTGCTGAGGC 2040  
15 TCAAAGTAAA AAGGAAAAAG CCAGAGATAA GAAACTCAGT CTGAATCCTA TTTACAGACA 2100  
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CGTGGGATT GATGTCTCTC TGGAGGAGGA GCACAGTGT CATGATGGG CAGCCTTGCT 2280  
GAAAGAGTTC CTGAGGGACA TGCCAGACCC CTTTCTCACC AGGGAGCTGT ACACAGCTTT 2340  
20 CATCAACACT CTCTTGTGG AGCCGGAGGA ACAGCTGGGC ACCTTGCAGC TCCTCATATA 2400  
CCTTCTACCT CCTGCAACT GCGACACCT CCACCGCTG CTACAGTTCC TCTCATGT 2460  
GGCCAGGCAT CGCATGACA ACATCAGCA AGATGGGCAA GAGTCACTG GGAATAAAAT 2520  
GACATCTCA AACTTAGCCA CCATATTGG ACCCAACCTG CTGCACAAGC AGAAGTCATC 2580  
AGACAAGAAA TTCTCAGTTC AGAGTTCAGC CCGGGCTGAG GAGAGCAGCG CCATCATCGC 2640  
25 TGTGTGCAA AAGATGATTG AAAATTATGA AGCCCTGTTT ATGGTTCCCG CAGATCTCCA 2700  
GAACGAAGTG CTGATCAGCC TGTTAGAGAC CGATCTGAT GTGCTGGACT ATTACTCAG 2760  
AAGAAAGGCT TCCCAATCAT CAAGCCTGA CATGCTGAG TGGAAAGTTT CCTTTCCGT 2820  
GGGAGGGAGG CATTCTCTA CAGACTCCA CAAGGCCTCC AGCGGAGACA TCTCCCTTA 2880  
TGACAACAC TCGCCAGTGC TGTCTGAGCG CTCCCTGCTG GCTATGCAAG AGGACGCGGC 2940  
30 CCGGGGGGCG TCGGAGAAC TTTACAGAGT GCCAGGCGAG TTTATGCTGG TGGGCCACTT 3000  
GTGCTGCTCA AAGTCAAGGG AAAGTTCTCC TGGACCAAGG CTGGAAGAA ATCTGTGAGA 3060  
GGAGGCTTTC GATATCTGGG GAACCTGGCA TTCAACATTA AAAAGCGGAT CCAAGACCC 3120  
AGGAATGACA GGTTCCTCTG GAGACATTTT TGAAGCAGC TCCCTAAGAG CCGGGCCCTG 3180  
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35 GCTGACAGCG GACACGAGG GGGCTGGAG GACTCAGGCC GCAGCCCCCG CAGCAGGAGG 3300  
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CAGCGAGAGT GAGCTGGATG TGGCGGGCT GCAGAGCCGG GCCACACCTC AGTGCCAAAG 3480  
ACCCATGGG AGTGGGAGG ATGACAAGCG GCGCCCGCT CCATACCCGG GCCCAGGAA 3540  
40 GCGCGCGCA CCGGCGAGCT GGATCCAGG GCGCCCGGAA GCGGTGGAGA CACCCACGGA 3600  
CCAGGGAGGC CAAGCAGCG AGCGAGAGCA GCAGGTCAAG CAGAAAAAC TGAGCAGCGC 3660  
CAACTCCGT CCAGCGGGG AGCAGGACAG TCCGCGCTG GGGGACGCTG GCTGGCTCGA 3720  
CTGCGAGAGA GAGCGCTGGC AGATCTGGGA GCTCCTGCG ACCGACAACC CCGATGCCCT 3780  
GCGGAGAGC CTGCTCTAG CCGCACCCA GCGGAGCCCG CCTGCCCGG AGCCCCCGC 3840  
45 CCGCAGCCG AGGGGGGACC GTGGGTGGT GGCATGGCA CACTTAQTGT TCTTCTTCA 3900  
CACTTCTCAA AAGTGACACA AGAGAAATCC AGTTCACTA CAGAGGTAGA GCACCTCAGC 3960  
CCCCCAGT ATGAATAAGG TTCCATTGCG TAGCCAGCCT TAGGAAAAAC AAACAGAAAC 4020  
CAACCGAT GCACATGTCC AATCTAAAAA CGTCCCTCTT GGCTCTATA TATAAGATAC 4080  
AATCTGCT TGGTATAGCC TAACCGTATT TATGTGCTT CGGTTTGGC TATTGTGTAT 4140  
50 TCTGTAACAG ATTATGTATA ATCATATATG ATATATTAC AAAGAGAAAA CAAAAGGAAC 4200  
TTTTAAAAA AAAATCACTT CACTTATATT AAGCAATGAG ATATACTAAA CAATGAGATT 4260  
CTATAGCAAT TCTAGAAATG TGCACAAGCG GGTTCCTGT CTTTGGCAT AGCTTTATAA 4320  
CTGGGGATAA CCTTCTCTC GATACCAAC ACTAACAAGA GGAAGCAGAA TATGAGAAGC 4380  
CATATTTTA CATAGGAGTC AGATACAAAA AGAAAAATCA CTGAATGCTT TTAGATATTG 4440  
55 AATACGTTT CAGGAAAAATG CTAATCTGA TAGATTACGA AATATATTT TAGAAGTGT 4500  
TTAGAAAGGA TTCAGTTAA CAAACAAGAA AAAGGCAGTG CCTCACAAG AAATTAAGAA 4560  
GTTGCTCGTC CCAGTTACA TCAAATTCAG TTTTATATAG GCCATATATA ATATATATT 4620  
ATAATGTATA ATTTTATGT ATTTTCAA ACTACAACT GGAATCCAAC TATAAAGTGT 4680  
TTAAGAATCT ACACAGAATA TTCAAATTAT AGAATATGTT TTTTCCCTT GCCCATAAT 4740  
60 CAGTATTGC CAAATTACAT GCAATTCCTT AAAAATAA TCACATTGT AAAAGGCCA 4800  
CAGCTTTGA CTATATTGT GCCAAGGCT GAGGAAATGT TTTCTTCA ATTTTATGT 4860  
GTATTGTAAT ATGTTCTACC GTACTTATG AGTTTGAAGT TTCAAGTGC ATAACATTT 4920  
TIGACCAGCA GAAGGGGATA CGCTTCAGTA TTTTATGCAA TTTTITTTCA CTTCGAAGGG 4980  
AAAGTGATT ATAAAAAAG ATTTTITTT TTTAAACAT GCTACTCTTA ATTTTCATGT 5040  
65 TGGTGATGAA ATTCCAGTG GTGTTTCTTA AGGTCTATC TTGTGCCATG ATGAATAAAA 5100  
AGTTAAGCAA AAAAAA AAAA AAAA

70 SEQ ID NO:146 PFG6 Protein sequence:  
Protein Accession #: NP\_038288.1

1 11 21 31 41 51  
75 MSAQSLHVS FSCSSPASS AASAKGFSKR KLRQTRSLDP ALIGGCGSDE AGAEGSARGA 60  
TAGRLYSPSL PAESLGPRLA SSSRGPPRA TRLPFGPLC SSFSTPSTQ EKSPSGSFHF 120  
DYEVLGRGG LKKSMAWDLF SVLAGPASSR SASSILCSSG GGFNGIFASP RRWLQQRKFQ 180  
SPFDSRGHFP VVWKSEGDFT WNSMSGRSVR LRSVPIQSL ELERARLQEV PFYQLQDQCD 240  
LSCQITPKD GQKRKSLRK KLDLGLKEKN KDKEFIPQAF GMPLSQVIAN DRAYKLKQDL 300  
QRDEQKQASD FVASLLPFGN KRQNKELSSS NSSLSTSET PNSTSPNT EPAPRRRRG 360

AMSVDSITDL DDNQSRLEA LQLSLPAAQ SKKEKARDKK LSLNPTYRQV PRLVDSCCQH 420  
 LEKHGLQTVG IFRVGSSKKR VRQLREEFDR GIDVSLREEH SVHDAALLK EFLRDMPL 480  
 LTRLEYTAFTNTLLLEPEEQ LGTLQLLIYL LPPCNCDTLH RLLQFLSIVA RHADDNISKD 540  
 5 GGQVETGNKMT SLNLAITFGP NLLHKQKSSD KEFSVQSSAR AEESTAIIV VQKMIENYEA 600  
 LFMVFPDLQN EVLISLLETD PDVVDYLLRR KASQSSPDM LQSEVSFVG GRHSSTDSNK 660  
 ASSGDISPYD NNSPVLERS LLAMQEDAAP GGSEKLYRVP GQFMLVGHLS SSKSRESSPG 720  
 PRLGKDLSEB PFDIWTGTHS TLKSGSKDPG MTGSSGDIFE SSSLRAGPCS LSQGNLSPNW 780  
 PRWQGSAPAE L DSDTQGAARRT QAAAPATEGR AHPAVSRACS TPHVQVAGKA ERPTARSEQY 840  
 10 LTLGSAHDL S ESELDVAGLQ SRATPQCQRP HSGSRDDKRP PFPYPGPKP AAAAAWIQGP 900  
 PEGVEITPDQ GGQAAEREQQ VTQKKLSSAN SLPAGEQDSP RLGDAGWLDW QRERWQIWEL 960  
 LSTDNPDALP ETLV

15 SEQ ID NO:147 PFG4 DNA SEQUENCE

Nucleic Acid Accession #: NM\_002202

Coding sequence: 240-1289 (underlined sequences correspond to start and stop codons)

20 1 11 21 31 41 51  
 CCCCCGAGCC GCGCGAGTC TGCCGCGGCC GCAGCGCCTC CGCTCCGCCA ACTCCGCCGG 60  
 CTAAATTGG ACTCTAGAT CCGCGAGGCG GCGCGCAGC CGAGCAGCGG CTCCTTCAGC 120  
 25 ATTGGCAACC CCAGGGGCCA ATATTCCCA CTAGCCACA GCTCCAGCAT CCTCTCTGTG 180  
 GGCTTTTAC CAACTGTACA ACCAACCATT CACTGTGGAC ATTACTCCTT CTACAGATA 240  
 TGGGAGACAT GGGAGATCCA CCAAAAAA AACGTCTGAT TTCCCTATGT GTTGGTTGCG 300  
 CGAATCAGAT TCACGATCAG TATATTCTGA GGGTTTCTCC GGATTGGAA TGGCATGGCG 360  
 CATGTTTGA ATGTGCGGAG TGAATCAAT ATTGGACGA GAGCTGTACA TGCTTTGTTA 420  
 30 GGGATGGGAA AACCTACTGT AAAAGAGATT ATATCAGGTT GTACGGGATC AAATGGGCCA 480  
 AGTGACAGAT CGGCTTACG AAGAAGGACT TCGTGAATGCG TGCCCGCTCC AAGGTGTATC 540  
 ACATCGAGTG TTTCGCTGT GTGGCCTGCA GCGCCAGCT CATCCCTGGG GACGAATTTG 600  
 CGCTTCGGGA GGAAGGTCCT TCTGCGAG CAGACCAAGA TGTGTGGAG AGGCCAGTC 660  
 TAGGGCTGG CGACCCGCTC AGTCCCTGTC ATCCAGCGCG GCCACTGCAA ATGGCAGCGG 720  
 35 AGCCCATCT CGCCAGGCGC CCAGCCCTGC GGCCCACTG CCACAAGCAG CCGGAGAAGA 780  
 CCACCCGGGT GGGGCTGTG CTGAACGAGA AGCAGCTGCA CACCTTGGCG ACCTGCTACG 840  
 CCGCAAAACC GGGGCCAGAT GCGCTCATGA AGGAGCAACT GGTAGAGATG ACGGGCCTCA 900  
 GTCCCGTGT GATCCGGTCT TGGTTTCAA ACAAGCGGTG CAAGGACAAG AAGCGAAGCA 960  
 TCATGATGAA GCAACTCCAG CAGCAGCAGC CCAATGACAA AACTAATATC CAGGGGATGA 1020  
 40 CAGGAATCC CATGTGGCT GCCAGTCCAG AGAGACAGA CGGTGGCTTA CAGGCTAACC 1080  
 CAGTGGAAAT GAACAAGTTAC CAGCCACCTT GGAAAGTACT GAGCGACTTC GCCTTGCAGA 1140  
 GTGACATAGA TGGCCTGCT TTTCAGCAAC TGGTCAATTT TTCAGAAGGA GGACCGGGCT 1200  
 CTAATTCCAC TGGCAGTGAA GTAGCATCAA TGCTCTCTCA ACTTCCAGAT ACACCTAACA 1260  
 GCATGGTAGC CAGTCTATT GAGGCATGAG GAACATTATC TCTGTATTTT TTTTCCCTGT 1320  
 45 TGGAGAAAGT GGGAAATTAT AATGTGGAAC TCTGAAACAA AAGTATTTAA CGACCCAGTC 1380  
 AATGAAACT GAATCAAGAA ATGAATGCTC CATGAAATGC ACGAAGTCTG TTTAATGAC 1440  
 AAGGTGATAT GGTAGCAACA CTGTGAAGAC AATCATGGGA TTTTACTAGA ATTAACAAC 1500  
 AAACAAAAAC CAAAACCCAG TATATGCTAT TCAATGATCT TAGAAGTACT GAAAAAATA 1560  
 GACGTTTTTA AAACGTAGAG GATTATATT CAAGGATCTC AAAGAAAGCA TTTTCAATTC 1620  
 50 ACTGCACATC TAGAGAAAA CAAAAATAGA AAATTTCTA GTCCATCCTA ATCTGAATGG 1680  
 TGCTGTTTCT ATATTGGTCA TTGCCTGCC AAACAGGAGC TCCAGCAAAA GCGCAGGAAG 1740  
 AGAGACTGGC CTCCTTGCT GAAAGAGTCC TTTCAGGAAG GTGGAGCTGC ATTGGTTTGA 1800  
 TATGTTTAAA GTTGACTTTA ACAAGGGGTT AATTGAAATC CTGGGTCTCT TGGCCTGTCC 1860  
 TGTAGCTGGT TTATTTTTTA CTTTGGCCCC TCCCACTTT TTTTGAGATC CATCTTTAT 1920  
 55 CAAGAAGTCT GAAGCGACTA TAAAGGTTT TGAATTCAGA TTTAAAAACC AACTTATAAA 1980  
 GCATTGCAAC AAGGTTACCT CTATTTTGCC ACAAGCGTCT CGGATTTGTG TTTGACTTGT 2040  
 GTCTGTCAA GAATTTTCC CCCAAGATG TGTATAGTTA TTGTTAAAA TGACTGTTT 2100  
 CTCTCTAT GGAAATAAAA AGGAAAAAAA AAAGGAAACT TTTTGTGTTT GCTCTGTGAT 2160  
 TGCAAAATTT ATAAAGTAAT TTATTATTTA TTGTCGGAAG ACTTGCCACT TTTCATGTCA 2220  
 60 TTGACATTT TTTGTTTGT GAAGTAAAA AAAAAAGATA AGGTTGTACG GTGGTCTTTG 2280  
 AATTATATGT CTAATCTAT GTGTTTGTCT TTTTCTTAA ATATTATGT AAATCAAAGC 2340  
 GCCATATGTA GAATTATATC TTCAGGACTA TTCACTAAT AAACATTGG CATAGAT

65 SEQ ID NO:148 PFG4 Protein sequence:

Protein Accession #: NP\_002183.1

70 1 11 21 31 41 51  
 MGDPPKKRL ISLCVGGNQ IHDQYILRV PDLEWHAACL KCAECNQYLD ESCTCFVRDG 60  
 KTYCKRDYIR LYGIKCAKCS IGFSKNDVFM RARSKVYHIE CFRVCVCSRQ LPGDEFALR 120  
 EDGLFCRADH DVVERASLGA GDPLSPLHPA RPLQMAAEPI SARQPALRPH VHKQPEKTR 180  
 VRTVLNEKQL HTLRCTYAAN PRPDALMKEQ LVEMTGLSPR VIRVWFQNR CKDKKRSIMM 240  
 75 KQLQQQPNP KTNIGMTGT PMVAASPERH DGGLQANPVE VQSYQPPWKV LSDFALQSDI 300  
 DQPAFQQLVN FSEGGPGSNS TGSEVASMSS QLPDTPNSMV ASPIEA

## SEQ ID NO:149 PFG2 DNA SEQUENCE

Nucleic Acid Accession #: NM\_001172

Coding sequence: 39-1103 (underlined sequences correspond to start and stop codons)

5 1 11 21 31 41 51  
 | | | | |  
 GCGGAGCTCT GCCTTGGAGA TTCTCAGTGC TGCGGATCAT GTCCTAAGG GGCAGCCTCT 60  
 CGCGTCTCCT CCAGACGCGA GTGCATTCCA TCCTGAAGAA ATCCGTCCAC TCCGTGGCTG 120  
 10 TGATAGGAGC CCCGTTCTCA CAAGGGCAGA AAAGAAAAGG AGTGAGGCAT GGTCCCGCTG 180  
 CCATAAGAGA AGCTGGCTTG ATGAAAAGGC TCTCCAGTTT GGGCTGCCAC CTAAAAGACT 240  
 TTGGAGATTG GAGTTTACT CCAGTCCCA AAGATGATCT CTACAACAAC CTGATAGTGA 300  
 ATCCAGCTC AGTGGGTCTT GCCAACCAGG AACTGGCTGA GGTGGTTAGC AGAGCTGTGT 360  
 CAGATGGCTA CAGCTGTGTC ACAGTGGAG GAGACCACAG CCTGGCAATC GGTACCATT 420  
 GTGGCCATGC CCGACACTGC CCAGACCTTT GTGTGTCTG GGTGATGCC CATGCTGACA 480  
 15 TCAACACACC CCTTACCACT TCATCAGGAA ATCTCCATGG ACAGCCAGTT TCATTCTCC 540  
 TCAGAGAAGT ACAGGATAAG GTACCACAAC TCCCAGGATT TTCTGGATC AAACCTTGTA 600  
 TCTCTTGC AGTATTGTG TATAATGGT TGAGAGACGT GGACCTCTCT GAACATTITA 660  
 TTTTAAAGAA CTATGATATC CAGTATTTT CCATGAGAGA TATTGATCGA CTGGTATCC 720  
 AGAAGGTCAT GGAACGAACA TTGATCTGC TGATTGGCAA GAGACAAAGA CCAATCCATT 780  
 20 TGAGTTTGA TTTGATGCA TTGACCTA CACTGGCTCC AGCCACAGGA ACTCTGTTG 840  
 TCGGGGACT AACCTATCGA GAAGGCATGT ATATTGCTGA GGAATACAC AATACAGGGT 900  
 TGCTATCAGC ACTGGATCTT GTTGAAGTCA ATCTCAGTT GGCACCTCA GAGGAAGAGG 960  
 CGAAGACTAC AGCTAACCTG GCAGTAGATG TGATTGCTTC AAGCTTGGT CAGACAAGAG 1020  
 AAGGAGGGCA TATTGTCTAT GACCAACTTC CTACTCCAG TTCACCAGAT GAATCAGAAA 1080  
 25 ATCAAGCACT GTTGAGAAAT TAGGAGACAC TGTGCACTGA CATGTTTCAC AACAGGCATT 1140  
 CCAGAATTAT GAGGCATTGA GGGGATAGAT GAATACTAAA TGGTGTCTG GGTCAATACT 1200  
 GCCTTAATGA GAACATTAC ACATCTCAC AATTGTAAG TTCCCTCTCT ATTTGGTGA 1260  
 CCAATACAC TGTAAATGTA TTGGTTTTT TGCAGTTAC AGGTATTAAA TATGCTACAG 1320  
 TACTATGTAA ATTTAAAGAA GTCAATAACA GCATTATTA CCTTGGTATA TCATACTGGT 1380  
 30 CTGTGTCTG TGTGCTTC ACATTAAAGT GGTTTTCAT CTTTCTCCC TCTCCACA 1440  
 GCCTGGCTAT ACAGTGCATC CTGAACTGT CAGCCACAG CAGCAATATG CTTATTCTAT 1500  
 CCACATCCCT AACATCATGC ATTCACAAGG TCAAAGTTCT GGTCCACAAA CCCTCCCTA 1560  
 TAGAAGTTCA ATGGCTCGA AAGAATTTGT AGTAAACCAG GCCTCCAGG ATGGCGAGCT 1620  
 CAGTAAGAT GATAATGGAA AGCAGCAGCT TGTGGTGTG CACTCTCAA AGAGAAGCAA 1680  
 35 AGTGGGAGT AGTGGAGCTG TTGATAACC TTCTTCTAA ACATTGGGG GTTAGACCTG 1740  
 GGACCACGGC TGGATACTCT GAGGCTGTAT GTTTGATCAC ACAGCCACTT AGCAGGAAGT 1800  
 ACTCATAAGG TTCTTAGCTG GTCATTAGG GATAACACTG TCTACCTCAC AGAAATGTTA 1860  
 AACTGAGACA ATAAACCCA AAGCAT

## SEQ ID NO:150 PFG2 Protein sequence:

Protein Accession #: NP\_001163.1

45 1 11 21 31 41 51  
 | | | | |  
 MSLRGSLSRL LQTRVHSILK KSVHSVAVIG APFSQGQKRK GVEHGPAAIR EAGLMKRLSS 60  
 LGCHLKDFGD LSFTVPVKDD LYNNLIVNFR SVGLANQELA EVVSRVSDG YSCVTLGDDH 120  
 SLAIGTSGH ARHCPDLGVV WYDAHADINT FLTSSGNLH GQPVSFLLRE LQDKVPQLPG 180  
 50 FSWIKPCISS ASIVYIGLRD VDPPEHFILK NYDIQYFSMR DIDRLGIQKV MERTFDLLIG 240  
 KRQRPHLSF DIDAFDPTLA PATGTPVVG LTYREGMYIA EEIHNTGLLS ALDLVEVNPQ 300  
 LATSEEAAT TANLAVDVA SSGQTREGG HIVYDQLPTP SSPDESENQA RVRI

## SEQ ID NO:151 PFG1 DNA SEQUENCE

Nucleic Acid Accession #: NM\_017806

Coding sequence: 80-1255 (underlined sequences correspond to start and stop codons)

60 1 11 21 31 41 51  
 | | | | |  
 AATTATATAT TTTTACTCTA TGTTCCTCTA CATGTTTTT TCTTCCGTT GCTGGCGGAA 60  
 GAGGCACGTG CGCTGCTGAA TGGAGCTGGT CGCTGGTTGC TACGAGCAGG TCCTCTTTGG 120  
 GTTCGCTGTA CACCCGGAGC CCAAGGCTTG CGGCGAACAC GAGCAATGGA CTCTGTGGC 180  
 65 TGACTTCACT CACCATGCTC ACAGTGCCTC CTGTGACGA GTAGCTGTAA ATAGTCGTTT 240  
 TGTGGTCACT GGGAGCAAAG ATGAAACAAT TCACATTTAT GACATGAAAA AGAAGATTGA 300  
 GCATGGGGCT CTAGTGCAAT ACAGTGGTAC AATAACTTGC CTGAAATTCT ATGGCAACAG 360  
 GCATTTAATC AGTGGAGCGG AAGATGGACT CATCTGTATC TGGGATGCAA AGAAATGGGA 420  
 ATGCTGAAG TCAATTAAAG CTCACAAAGG ACAGGTGACC TTCTTTCTA TTCACCCATC 480  
 70 TGGCAAGTTG GCCTGTGCGG TTGGTACAGA TAAACTTTA AGAAGTGA ATCTTGTA 540  
 AGGAAGATCA GCATTCTATA AAAATATAAA ACAAAATGCT CACATAGTAG AATGGTCCCC 600  
 AAGAGGAGAG CAGTATGTAG TTATCATACA GAATAAATA GACATCTATC AGCTTGACAC 660  
 TGCAATGAGT AGTGGACCA TCACAAATGA AAAGAGAAAT TCCTCTGTTA AATTCTTTTC 720  
 AGAGTCTGTC CTTCAGTGG CTGGAGATGA AGAAGTTATA AGGTTTTTIG ACTGTGATT 780  
 75 ACTAGTGTGC CTCTCGCAAT TTAAGCTCA TGAACACAGG GTAAAGGACA TGTTCAGTTT 840  
 TGAAATTCCA GACATCATG TTATTGTTT AGCATCGAGT GATGGTTTCA TCAAAATGTG 900  
 GAAGCTTAAG CAGGATAAGA AAGTTCCCCC ATCTTACTC TGTGAAATAA ACATAATGC 960  
 CAGGCTGAGG TGTCTGGAG TGTGGCTAGA CAAAGTGCCA GACATGAAAA GCCTTCTCC 1020  
 AGCTGCAGAG CCTTCTCTG TAAGTAAAGA ACAGTCCAAA ATTGGCAAAA AGGAGCCTGG 1080  
 TGACACAGTG CACAAGAAG AAAAGCGGC AAAACCTAAC ACAAGAAAAC GCGGTTTAAAC 1140

AGGTGACAGT AAGAAAGCAA CAAAAGAAAG TGGCCTGATA TCAACCAAGA AGAGGAAAAT 1200  
 GGTAGAAATG TTGGAAGAAA AGAGGAAAAA GAAGAAAAATA AAAACAATGC AGTGAATCAC 1260  
 AGATGTCTCC TGAAGAACT CTTTATAGATG AAATCATCTCT ACTCAATGT ACCTTAATTT 1320  
 TTTTITTCCT CTGAGTAAAA GCAAGAAAT TCTTCCTTTG GAAAAATAT ATATATTAAA 1380  
 AAACCACTTT TAGATGGTTT TTTTAAAAA AAAAAAAAAA ACTGGTAAAA TTACTTTTGG 1440  
 CAGACAGTGT TTTATGAAT ATGTATCATG TTGATATATA ATATGTTAAT GTGTCATGTA 1500  
 ATTTTACIT TGTACAAAGC AAATAAAGAT CTTTCTCAAA AAAAAAAAAA AAAA

10

SEQ ID NO:152 PFG1 Protein sequence:  
 Protein Accession #: NP\_060376.1

15

1 11 21 31 41 51  
 MELVAGCYEQ VLFGFAVHPE PKACGDHEQW TLVADPTHHA HTASLSAVAV NSRFVVTGSK 60  
 DETHIYDMK KKEHGAALVH HSGTITCLKF YGNRHLISGA EDGLICTWDA KKWECLKSIK 120  
 AHKGGQVFLS IHPSGKLALS VGTDKLRTW NLVEGRSAFI KNIKQNAHIV EWSFRGEQYV 180  
 VIQNKIDIV QLDTSISGT ITNEKRISV KFLSESLAV AGDEEVIRFF DCDLSVCLCE 240  
 FKAHENRVKD MFSFEIPEHH VIVSASSDGF IKMWKWKQDK KVPFSLICEI NTNARLTCLG 300  
 VWLDKVADMK SLPPAAEPPS VSKEQSKIGK KEPGDTVHKE EKRSKPNTKK RGLTGDSKKA 360  
 TKESGLISTK KRKMVEMLEK KRKKKKIKTM Q

25

SEQ ID NO:153 PFD6 DNA SEQUENCE

Nucleic Acid Accession #: NM\_014568  
 Coding sequence: 110-2953 (underlined sequences correspond to start and stop codons)

30

1 11 21 31 41 51  
 GATGTCTTGG ACATGCTCTG GCTGGCTAAT CTCCATGTC TAGCCGACTG AAAATACGGT 60  
 GGCCAAGTGG ATGGTGTGCT TATTTCAGT CTAAGAAAT TTCTTTTGA TGTGGCAGAA 120  
 AATCGAGGAT GTGGAGTGGG GACCCAGAC TTACTTGGAG CTGGAGGGTC TGCTTGCAT 180  
 CCTGATCTTC AGTGGGATGG ACCCGCATGG GGAGTCTTGG CCGAGGCTTT TGAGGTACTG 240  
 TGACCTGCGA TTGATAAACT CCTCTGCTT GGTGAGAACA GCCTTGGAGC AGGAGCTGGG 300  
 CCTGGCTGCC TACTTTGTGA GCAACGAGGT TCCCTTGGAG AAGGGGGCTA GGAACGAGGC 360  
 CTGGAGAGAT GATGCTGAGA AGCTGAGCAG CACAGACAAC GAGGATGAGG AGCTGGGGAC 420  
 AGAAGGCTCT ACCTCGGAGA AGAGAAGCCC CATGAAAAGG GAGAGGTCCC GCTCCACGA 480  
 CTCAGCATCC TCATCCCTCT CCTCAAGGC TTCCGGTTCA GCCTCGGTG GCGAGTCTCT 540  
 GGCTCAGCCC ACAGCACTCC CCCAGGGAGA GCATGCCAGG TCGCCCCAGC CCCGTGGCCC 600  
 CGCAGAGGAG GGCAGAGCCC CTGGTGAGAA ACAGAGGCCC CGGGCAAGTC AGGGGCCACC 660  
 CTCGGCCATC AGCAGGCACA GTCCCGGGCC GACGCCAGC CCGACTGTA GCCTCAGGAC 720  
 CGGCAGAGG AGCGTCCAGG TGTGGTTCAC CTCGTGTGTC TCCAGCTGT CCTCTCTCT 780  
 GGGCTCATCC TCCTCATCCG TGGCGCCCGC TGCGGCAAG TGGGTCTCTC AGGCCTCCCA 840  
 GTGCTCTCTG ACCAAGGCTT GCGGCCAGCC ACCCATTTTC TTTTGCCA AGCTGTGTA 900  
 CGACATGTT GTGTCCACTG ACAGCAGTGG CTTGCCAAG GCGGCTCCC TCCTGCCCTC 960  
 CCGCTCGGTC ATGTGGGCA GCTCTTCCG CCGCTGCTC AGCAAGACCA TGACATCCAC 1020  
 CGAGCAGTCC CTCTACTACC GGCAGTGGAC GGTGCCCGG CCCAGCCCA TGGACTACGG 1080  
 CAACCGGGCC GAGGGCCCGG TGGACGGCTT CCACCCCGG AGGCTGCTGC TCAGCGGCC 1140  
 CCCTCATG CGTCAAGAGCAG GTGCTTACCT GCAGTTCTCT AGTGTCTGT CCAGGATGCT 1200  
 TGTTCGCTC ACAGAAGTGG ATGTCTATGA CGAGGAGGAG ATCAATATCA ACCTCAGAGA 1260  
 AGAATCTGAC TGGCATTATC TCCAGCTTAG CGACCCCTGG CCAGACCTGG AGCTGTTCAA 1320  
 GAAGTTGCC TTTGACTACA TCATTACGA CCCGAAGTAT GAAGATGCA GCCTGATTG 1380  
 TTGCACTAT CAGGGTATAA AGAGTGAAGA CAGAGGGATG TCCCGGAAGC CGGAGGACCT 1440  
 TTATGTGCGG CGTCAAGAGC CACGGATGAG ACTGTCCAAG TACCGAGCGT ACAACACTTA 1500  
 CCACCACTGT GAGCAGTGCC ACCAGTACAT GGGCTTCCAC CCGGCTACC AGCTGTATGA 1560  
 GTCCACCTG CACGCCCTTG CTTCTCTTA CTCCATGCTA GGAGAGGAGA TCCAGCTGCA 1620  
 CTTATCATC CCAAGTCCA AGGAGCAACA CTTGTCTTC AGCCAACCTG GAGGCCAGCT 1680  
 GGAGAGCATC CGACTACCCC TGTGACAGA CAAGAGCCAT GAATATATAA AAAGTCCGAC 1740  
 ATTCACTCCA ACCACCGGCC GTACGAAACA TGGGCTCTTT AATCTGTACC ACGCATGGA 1800  
 CGGTGCCAGC CATTGACAG TGCTGGTTGT CAAGGAATAC GAGATGGCAA TTTATAAGAA 1860  
 ATATTGCCC AACACATCA TGCTGGTGT CCCCAGTATC TTCAACAGTG CTGGAGTTGG 1920  
 TGCTGCTCAT TTCTCATCA AGGAGCTGTC CTACATAAC CTGGAGCTCG AGCGGAACCG 1980  
 GCAGGAGGAG CTGGGAATCA AGCCGAGGA CATCTGGCTT TCAATTGTA TCTTGATGA 2040  
 CTCCTGCGTG ATGTGGAACG TGTGGATGT CAACTCTGCT GGGGAGAGAA GCAGGGAGTT 2100  
 CTCCTGCTG GAAAGGAACG TGTCTTTGAA GCACATCATG CAGCAGATCG AGCGGGCCCC 2160  
 CGACATCATG CACTACGCCG TGCTGGGCT GCGGAAGTGG TCCAGCAAGA CCGGGGCCAG 2220  
 CGAGGTGCAA GAGCCCTCT CCGCTGCCA CGTGCAAC TTATCATCC TGAACGTGGA 2280  
 CCTGACCCAG AACGTGCAGT ACAACCAGAA CCGGTTCTTG TGTGACGATG TAGACTTCAA 2340  
 CCGCGGTG CACAGCGCGG GCCTCTGCT CTGCGGTTT AACCGTTCA GCGTGTATGA 2400  
 GAAGCAGATC GTGGTGGCG GGCACAGGTC CTTCACATC ACATCAAGG TGTCTGATAA 2460  
 CTCTGCGCG GTGTTGCGG CCGAGTACAT CTGTGCCCG GACAGCAAGC ACACGTTCTC 2520  
 CGCAGCGGCC GCGCAGTCC TGCTGGAGAA GTTCTGCGAG CACCACAGCC ACCTCTCTT 2580  
 CCGCTGTCC CTGAAGAACC ATGACCACCC AGTGCTGTCT GTGACTGTT ACTTGAACCT 2640  
 GGGATCTCAG ATTCTGTTT GCTATGTGAG CTCAGGCC CACTCTTAA ACATCAGCTG 2700  
 CTCGGACTTG CAGTTCAAGT GGCTGCTGCT GTACCTCTGT GACTCTTTG TGGGAGCTAG 2760  
 CTTTTGAAA AAGTTTCAIT TTCTGAAAGG TCGACGTTG TGTGTCACT GTCAAGACCG 2820  
 GAGCTCACTG CGCCAGACGG TGTCCGCTT GGAGCTCGAG GACGAGTGGC AGTTCGGCT 2880

GCGGATGAG TTCCAGACCG CCAATGCCAG GGAAGACCGG CCGCTCTTTT TTCTGACGGG 2940  
 ACGACACATC TGAGGAAGAC AGCGGCGAGT TTTCTGAAGA GATGAGTGCT CAGAGCCCTC 3000  
 ATGCTGTGTA GGCTAAAGGG AGGCCTGGAA CGGTGGGGCG TTTGACTGGA ATGGACCCCA 3060  
 GGGACTGTCC AGGTGCAGCC CCTCTAGTA CACATGGGCC CCCGAGGCGG TGTCTCTGGG 3120  
 5 AGCCAGGAAG ACTCCGCGT GGTGAGAAT GAAAACCTGA GACTCCCAAG TTCTGGGCCA 3180  
 GCCCATGTCT CTGGGCTGTT TTAAGGCCCA TTTCAGGAGG AACAAAGATT TACTTCTGT 3240  
 CCTGCCATTC GTGTGCTTCC ATGGACAAAC CTGATTTTTT TCTTCTAGTT CTAAGAATC 3300  
 TTGGGTTATT TTGTAGCGGT GCCAGTATT CAGTAGATGG GATTTCAGCC AAGTAGGTT 3360  
 10 CCCTGTAACC TCCTACAAAG CAATATTCCA AAGGAACATT TTAAGTAA AGGCTGGAGA 3420  
 CAAGAAAAA TAAGTAGATC GTTTAATAA CAATTATTTA ATTGCCTATA AGTTTGTGT 3480  
 TTCAGAGGCT AGCCCAAGG CATCAAAATT AATAAAGTTA AACAAATGA TTTACTTCAG 3540  
 AGCAAAATAT ATCTATTATA AATAATATAG GGTAAATACC CTACCTCTTA GAAAGGGCAA 3600  
 AAATGCAAGG AAGCTTTCTT TAAAACTAAA AGGGTTTTTT GGGGGGGGAG TTGGCGGGGA 3660  
 GGAATAAGG CTAACAGAGG TTGAACATAA ATTAGCCTTA CAAAGGAGAA AGGACCACAT 3720  
 15 TGCTTACTCG AACAGACAA TGAAACAAC CAAAGTGATA TATAAATAG TTGATGAGAA 3780  
 CTAGACTTAT GACTGTAGTT TACTAGATT TAGTTTTCAG TTGCTGAAGT AGCTCATTTT 3840  
 CTCTACTATA TGTTGGTTC CTCAGGGAAG AATCTCACTT GACTAGAGAG GAGGTGGGAA 3900  
 CAGAAGAGAG AAGGAGCGAG GGAGATGTAT TTCTTAGGGC TCACCCCTTC ACAGACTGAC 3960  
 AGAATGGTTT TGTTTGTGTT TGTTTGTGTT TGTTTGTGTT TTGAGATGGA CTCTAGCTCT 4020  
 20 GTCAACCCAG CTGGAGTGA GTGGTGCGAT CTCGGCTCAC TGCAAGCTCC GCTCCCGGG 4080  
 TTCTCACCAT TCTCTGCTCT CAGCCTCCG AGTAGCTGGG ACTACAGGCG CCCACCACA 4140  
 CGCCCGGCTA ATTTTGTGTA TTTTGTAGTA GAGACGGGGT TTCAACATGT TAGCCAGGAT 4200  
 GGTCGTGATC TCTGACCTC GTGATCGCC CGCCTCGGCC TCCCAAGTG CTGGGATTAC 4260  
 AGGCGTGAGC CACCGTGCTT GCGCCAGAAAT GGTTTTTTAA GCCACAGTTG AGAGGCCACC 4320  
 25 CATGCGCGG CGCTCGACA GTGATCATCT GTTTCATCTT GTTCAGTCTT TCTTGTGTG 4380  
 ATTGGAATTA TCAATCCCTT TTGAAAGATG AGAAGGTGGA GATGCAAGA GTCTACCTTT 4440  
 CCAAGTTCTC ACTGCTGGA AGAGCTAGAA GCACAGTTCA AAGTCTGTC TCTTGAGTCT 4500  
 TGCACTCAG GTCTCCCTTC TCCACTTGC CTACCTCAA TGCCACACTG TTTTGAAGT 4560  
 GGCCCAATAA TTGAAGGAAA AGTTTAAAGA CAGTTCAATT TAATCATCAG AATGCACTT 4620  
 30 TTTTGTGTTT GGAGACGGAG TTTCATCTT GCTGCCAGG CTGGAGTGCA ATGGTCAAT 4680  
 GATCTGGCT CACTGCAACC TCTGCTCTT GGGTCAAGT GATTCTCCAG CCTCAGCTC 4740  
 CCGAGTAGCT GGGATTATG GCGCCACCA CCATGCCAG CTAATTTTG TATTTTTTT 4800  
 TTTAGTAGA GATGGGGTTT CGCCAGGTTG GCCAGGCTGG TCTGTGAAC TCTTGGCTC 4860  
 AGGTGATCTG CCCACCTCAT CCTCAAAAG TGCTGGGATT ACAGGCATGA GCCACTGCGC 4920  
 35 CTGGCTCAG AATGACCTT TACACATCTA TCTAGACAT TTATAAGCAC TCTAATGGAT 4980  
 AACATCAA GAATAAATGA TTGTAAGAAG TGATGCCGAA GAGTTGATGT CAATCTTTT 5040  
 TTCTTAAGAA AAAAAGTCCG CGAGTATTA ATATTAGAT CAATGTTAT AAAATGATTA 5100  
 CTTGTATAT CTCAATTATC CTATTTTGA ATAAAACTG ACCTCTTTA ATCATATACT 5160  
 40 TGCTTTGT AAATAGCAGC TTTGTGTCA TTCTCCAC TTATTAGT AATTAAAT 5220  
 GGAATAAAC CTCAACAGC TATCTTGT TGTCCAGT TTATAATAA AACTTATAAT 5280  
 GCATG

45 SEQ ID NO:154 PFD6 Protein sequence:  
 Protein Accession #: NP\_055483.1

1 11 21 31 41 51  
 50 MWQKIEDVW RPQTYLELG LPCILFSGM DPHGESLPRS LRYCDLRLLN SSSLVRTALE 60  
 QELGLAAYFV SNEVPLEKGA RNEALESDAE KLSSTDNEDE ELGTGSTSE KRSPMKRERS 120  
 RSHDSASSL SSKAGSGALG GESSAQPTAL PQGEHARSFQ PRGPAEBGRA PGEKQRPAS 180  
 QGPPSAISRH SPGPTQFDC SLRTGQSVQ VSVTSSCSQL SSSSGSSSS VAPAGTWVL 240  
 55 QASQCSLTKA CRQPIVFLP KLVYDMVST DSSGLPKAAS LLPSPVMWA SSFPLLSKT 300  
 MTSTEQSLYY RQWTVPRPSH MDYGNRAEGR VDGHFPRLL LSGFPQIGKT GAYLQFLSVL 360  
 SRMLVRLTEV DVYDEEENI NLREESDWHY LQLSDPWPDL ELFKLPFDY IHDPKYEDA 420  
 SLICSHYQGI KSEDRGMSRK PEDLYVRRQT ARMRLSKYAA YNTYHHCQC HQYMGFHPRY 480  
 QLYESTLHAF AFSYSMLGEE IQLHFIPKS KEHHFVFSQP GGQLESMLRP LVTDKSHEYI 540  
 60 KSPITPTTG RHEHGLFNLV HAMDGASHLH VLVKEYEMA TYKKYWPNI MLVLSIFNS 600  
 AGVGAHFLI KELYHNL ELERNQEELGI KPQDIWPFIV ISDDSCVMWN VVDVNSAGER 660  
 SREFSWERN VSLKHIMQHI EAPADIMHYA LLGLRKWSSK TRASEVQEPF SRCHVHNFI 720  
 LNVDLTQNVQ YNQNRFLCDD VDFNLRVHSA GLLLCRFNRF SVMKKQIVVG GHRFSFHTSK 780  
 VSDNSAAVVP AQYICAFPSK HTFLAQAQL LLEKFLQHHS HLEFFLSLKN HDHPVLSVDC 840  
 65 YLNLGSQISV CYVSSRPHSL NISCDLLFS GLLLYLCSDF VGASFLLKFX FLKGATLCVI 900  
 CQDRSSLRQT VVRLELEDEW QFRLRDEFQT ANAREDRPLF FLTGRHI

# SEQ ID NO:155 PFC6 DNA SEQUENCE

70 Nucleic Acid Accession #: NM\_000522  
 Coding sequence: 1-1167 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
 75 ATGACAGCCT CCGTGCTCTC CCACCCCGCG TGGATGAGC CCACGTCAT GTTCTCTAC 60  
 GACAACGGCG GCGGCTCGGT GGCCGACGAG CTCAACAAGA ACATGGAAGG GGCGGCGGCG 120  
 GCTGCAGCAG CGGCTGCAGC GGCGGCGGCT GCGGGGCGCG GGGCGGGGGG CTCCCCAC 180  
 CCGGCGGCTG CGGCGGCGAG GGGCAACTTC TCGGTGGCGG CGCGGCGCGG GGCTCGGCGG 240  
 GCGCGCGCGG CCAACCAAGT CCGCAACTGT ATGGCGCACC CGGCGGCGCTT GGCGCCAGGA 300  
 GCGCGGTCGG CTAACAGCAG CGCCCGCGCG GAGGCGCGCG CTGCGGTGCG CGCGCTGCT 360



5 GCGCGGCTG CCGCTGCAGC CGCGCGCGCC GCGCGCGCGT CGTCTCTGGG AGGTCCCGGC 420  
 CCGGCGGGCC CCGGCGCGGC AGAGGCGGCC AAGCAATGCA GCGCTCTGTC GGCAGCGGG 480  
 CAGAGCTCGT CCGGGCCCGC GCGCTGCCC TATGGCTACT TCGGCAGCGG CTACTACCCG 540  
 TGCGCCCGCA TGGGCCCCGC CCGCAACGCC ATCAAGTCGT GCGCCAGCC CCGCTCGGCC 600  
 GCGCGCGCGC CGGCTCTGCG GGACAAGTAC ATGGATACCG CCGGCCAGC TGCCGAGGAG 660  
 TTCAGTCCC GCGCTAAGGA GTTCGCTTC TACCACCAGG GCTACGCAGC CCGGCCTTAC 720  
 CACCAACATC AGCCCATGCC TGGCTACCTG GATATGCCAG TGGTGCCGGG CCTCGGGGGC 780  
 CCGGCGGAGT CCGGCGCACG ACCCTTGGGT CTTCOCATGG AAAGCTACCA GCGCTGGGCG 840  
 CTGCCAACG GCTGGAACGG CCAATGTAC TGCCCCAAG AGCAGGCGCA GCCTCCCCAC 900  
 10 CTCTGGAAGT CCACTCTGCC CGACGTGGTC TOCCATDOCT CGGATGCCAG CTCTATAGG 960  
 AGGGGGAGAA AGAAGCGCGT GCCTTATACC AAGGTGCAAT TAAAAGAAT TGAACGGGAA 1020  
 TACGCCACGA ATAAATTCAT TACTAAGGAC AAACGGAGGC GGATATCAGC CACGACGAAT 1080  
 CTCTGTAGC GGCAGGTAC AATCTGGTTC CAGAACAGGA GGGTTAAAGA GAAAAAGTC 1140  
 ATCAACAAAC TGAACACCAC TAGTTAA

SEQ ID NO:156 PFC6 Protein sequence  
 Protein Accession #: NP\_000513.1

20 1 11 21 31 41 51  
 MTASVLLHPR WIEPTVMFLY DNGGGLVADE LKNMMEGAAA AAAAAAAAAA AGAGGGGPH 60  
 PAAAAAGGNF SYAAAAA AAAANQCRNL MAHPAPLAPG AASAYSSAPG EAPPSAAAAA 120  
 25 AAAAAA AAASSSGPG PAGPAAEAA KQCSPCSAAA QSSSGPAA LP YGYFGSGYYP 180  
 CARMGPPFA IKSCPQPSA AAAAAFADKY MDTAGPAAEE FSSRAKEFAF YHGYAAGPY 240  
 HHQPMGYL DMPVVPGLG PGESRHEPLG LPMESYQFWA LPNGWNGQMY CPKEQAQPPH 300  
 LWKSTLDPVV SHPSDASSYR RGRKKRVPT KVQLKELERE YATNKFTKD KRRISATTN 360  
 LSERQVTWPF QNRRVKEKV INKLKTS

# SEQ ID NO:157 PFA3 DNA SEQUENCE

Nucleic Acid Accession #: AW102723  
 Coding sequence: 523-2676 (underlined sequences correspond to start and stop codons)

35 1 11 21 31 41 51  
 CCCTATGGC GATTGGGGCG GTGCAGAGAC CAGGACTCAG TTCCCTGCG CTAGTCTGAG 60  
 40 CCGATGGGT GGGACTCAGC TCAGAGTCAG TTTTCAGAG CAGGTTTCAG TTGCAGAGTT 120  
 TTCTACACT TTCTCTGCG TAGAGCAGCG AGCAGCCTGG AACAGACCA GCGGAGGAC 180  
 ACCTGTGGG GAGGGAGCGC CTGGAGGAGC TTAGAGACCC CAGCGGGCG TGATCTCACC 240  
 ATGTGCGAT TTGCGAGCG CGCCCTGGAG CTGCTAGAGA TCCGGAAGCA CAGCCCGAG 300  
 GTGTGGAAG CCAACAAGAC TGCGGCTCTT GGAGAAAGCG TGAGCAGGG GCCACCGCG 360  
 45 TCTCCGCGT GTCTGCACC TGTCGCTGA GCTGCTGAC AGTGACAATG ACATCCAGT 420  
 TACCAGTCT CTGAATTGA TAGTGGCTT TGTGTGTC TCTCATATA GAACATACAGC 480  
 TCATCAGGAG GAGATCGCAG CAGGGTAAGA GACACCAACA CCATGTTCTG CACGAAGCTC 540  
 AAGGATCTCA AGATCACAGG AGAGTGTCTT TTCTCTTAC TGGCACCAGG TCAAGTCTCT 600  
 AACGAGTCTT CAGAGGAGG AGCAGGAAGC TCAGAGAGCT GCAAGCAAC CGTGCCCATC 660  
 50 TGTCAGACA TTCTGAGAA GAACATACAA GAAAGTCTT CTCAAAGAAA AACCATGCG 720  
 AGCCGAGTCT ATCTTCACAC TTGCGCAGAG AGTATTGCA AACTGATTT CCGAGAGTTT 780  
 GAACGGCTGA ATGTGCACT TCAGAGAACA TTGGCAAGAG ACAAATAAA AGAAAGCAGG 840  
 AAATCTTTG AAAGAGAAGA CTTGAAAAA ACAATTGCA AGCAAGCAGT GCAGCAGAGT 900  
 CCAGTGGAGT TATCAAAGAA TCTTTGGTG AAGAGGTTT TAAATATGT TACGAGGAAG 960  
 55 ATGAAACAT CCTTGGGGTG GTTGAGGCA CCTTAAAGA TTTTAAACA GCTTCAGTAC 1020  
 CCTCTGAAA CAGAGCAGCC ATTGCAAGA AGCAGGAAAA AGGGGCGAGT TGAGGAGGCC 1080  
 TCCATTCTAT GCGTGGATAA GGAGGATGAT TTCTACATG TTTACTACTT CTCCCTAAG 1140  
 AGAACCACT CCTGATTCT TCCGGCATC ATAAAGGCAG CTGCTCAGT ATTATATGAA 1200  
 AGGGAAGTG AAGTGTGCT AATGCTCCG TGCTCCATA ATGATTGCA GAGATTGTTG 1260  
 60 AATCAGCCCT ACTTGTGTA CTCGCTCAC ATGAAAGCA CCAAGCCATC CCGTCCCGC 1320  
 AGCAACCCG AGTCTCGCT GGTGATTCC ACATCGCTAT TCTGCAAGAC ATTCCATTG 1380  
 CATTTCAAT TTGACAAAGA TATGACAAT CTGCAATTG GCAATGGCAT CAGAAGGCTG 1440  
 ATGAACAGGA GAGACTTTCA AGGAAAGCCT AATTTGAAT ACTTTGAAAT TCTGACTCCA 1500  
 AAAATCAACC AGACCTTAT CGGGATCATG ACTATGTGA ATATGCAAT TGTGTACGA 1560  
 65 GTGAGGAGT GGGACAATC TGTGAAGAA TCTCAAGGG TTATGGACCT CAAAGGCCAA 1620  
 ATGATCTACA TTGTGAATC CAGTGCAATC TTGTTTTGG GGTACCCCTG TGTGACAGA 1680  
 TTAGAAGATT TTACAGGAGC AGGGCTCTAC CTCTCAGACA TCCCAATTCA CAATGCAGT 1740  
 AGGGATGTGG TCTTAATAGG GGAACAAGCC CGAGCTCAAG ATGGCCTGAA GAAGAGGCTG 1800  
 GGGAGCTGA AGGCTACCTT TGAGCAAGCC CACCAAGCCC TGGAGGAGGA GAAGAAAAAG 1860  
 ACAGTAGACC TTCTGTGCTC CATATTCCC TGTGAGGTTG CTCAGCAGT GTGGCAAGGG 1920  
 70 CAAGTTGTGC AAGCCAAGAA GTTCAGTAAT GTACCATGC TCTTCTCAGA CATCGTTGG 1980  
 TTCAGTCCA TGTCTCCCA GTGCTACCG CTGCAGTCA TCACCATGCT CAATGCAGT 2040  
 TACACTGCT TCGACEAGCA GTGTGAGAG CTGGATGCT ACAAGGTGGA GACCATGTG 2100  
 ATGCTATTG TGTGCTTGG GGGATTACAC AAAGAGAGTG ATACTCATG TGTTCAGATA 2160  
 GCGGTAGAG CCTGTGCTG GATGGAGCTC TCTGATGAAG TTATGTCTCC CCATGGAGAA 2220  
 75 CCTATCAAGA TGCGAATTGG ACTGCACTCT GGATCAGTT TTGCTGGCGT CGTTGGAGTT 2280  
 AAAATGCCCC GTTACTGTCT TTTTGAAGC AATGTCACT TGGCTAACAA ATTTGAGTCC 2340  
 TGCATGTAC CACGAAAAAT CAATGTACG CCAACAACCT ACAGATTACT CAAAGACTGT 2400  
 CCGTGTTCG TTTTACCCC TCGATCAAGG GAGGAACCT CACCAAACTT CCTAGTGAA 2460  
 ATCCCCGAA TCTGCCATTT TCTGGATGCT TACCAACAAG GAACAAACTC AAAACCATGC 2520

5 TTCCAAAAGA AAGATGTGGA AGATGCAAGC CAATTTTITA GGCAAAGCAT CAGGAATAGA 2580  
 TTAGCAACCT ATATACCTAT TTATAAGTCT TTGGGGTTTG ACTCATTGAA GATGTGTAGA 2640  
 GCCTCTGAAA GCACCTTAGG GATTGTAGAT GGCTAACAAAG CAGTATTAAA ATTCAGGAG 2700  
 CCAAGTGACA ATCTTTCTCC TGTTTAACAT GACAAAATGT ACTCACTTCA GTACTTCAGC 2760  
 10 TCITCAAGAA AAAAAAAAAA ACCTTAAAAA GCTACTTTTG TGGGAGTATT TCTATTATAT 2820  
 AACCAGCACT TACTACCTGT ACTCAAAATT CAGCACCTTG TACATATATC AGATAATTGT 2880  
 AGTCAATTGT ACAAACCTGAT GGAGTCACT GCAATCTCAT ATCCTGGTGG AATGCCATGG 2940  
 TTATTAAGT GTGTTTGTA TAGTTGTCGT CAAAAAAAAA AAAAAAAAAA AAAAAAAAAA 3000  
 AAAA

SEQ ID NO:158 PFA3 Protein sequence:  
 Protein Accession #: NP\_000847.1

15 1 11 21 31 41 51  
 MFCTKLKDLK ITGECFFSL APGQVFNES EEAAGSSESC KATVPICQDI PEKNQIESLP 60  
 20 QRKTSRSRVY LHTLAESICK LIPFERLN VALQRTLAKH KIKESRKSLE REDFEKTIAE 120  
 QAVQQSPVEL LKEDDLFLHV YVFFPKRTTS LILPGHIAA AHVLYETEVE VSLMPPCFHN 180  
 25 GQLEDAASILC LDKEDDLFLHV YVFFPKRTTS LILPGHIAA AHVLYETEVE VSLMPPCFHN 240  
 DCSEFVNQPY LLYSVHMKST KPSLSPSKPQ SSLVPTSLF CKTFPHFHF DKDMTILQFG 300  
 NGIRRLMNRN DFQKPNFEY FEILTPKINQ TFGDMITMLN MQFVVRVRW DNSVKKSSRV 360  
 MDLKGQMIYI VESSAILFLG SPCVDRLDF TGRGLYLSDI PIHNLARDVY LIGEQARAQD 420  
 30 GLKKRLGKLG ATLEQAAGAL EEEKKKTVDL LCSIFPCEVA QQLWQGVQV AKKFSNVTML 480  
 FSDIVGFTAI CSQCSPLQVI TMLNLYTRF DQCGELDVY KVETIAMPTV WLGGLHKESD 540  
 THAVQIALMA LKMMELSDV MSPHGEPIKM RIGLHSGSVF AGVVGKMPR YCLRGNNVTI 600  
 ANKFESCSVP RKINVSPTTY RLLKDCPGFY FTRSRRELP PNFPSEIPGI CHFLDAYQQG 660  
 TNSKPCQKK DVEDASQFFR QSIRNRLATY IPYKSLGFD SLKMCRASES TUGIVDG

## SEQ ID NO:159 PFA1 DNA SEQUENCE

Nucleic Acid Accession #: NM\_004362

Coding sequence: 102-1834 (underlined sequences correspond to start and stop codons)

35 1 11 21 31 41 51  
 GCGCGGGGGG ACTGGTCTGA AGAGACGCGG GGACAAAGTG GCAACGACTT GGACATCTGA 60  
 40 GCTGTCACTG CCGAAAAACAG GCGCAAGAG AGATAATCAA TATGCATTTC CAAGCCTTTT 120  
 GGCTATGTTT GGGTCTCTTG TTCACTCAA TTAATGCAGA ATTTATGGAT GATGATGTTG 180  
 AGACGGGAAG CTTTGAAGAA AATTCAGAAG AAATGATGT TAATGAAAGT GAACCTTTCCT 240  
 CAGAGATTAA ATATAAGACA CCTCAACCTA TAGGAGAAGT ATATTTTGCA GAAACTTTTG 300  
 ATAGTGGAAG GTTGCGTGA TGGGTCTTAT CAAAAGCAA GAAAGATGAC ATGGATGAGG 360  
 45 AAATTTCAAT ATACGATGGA AGATGGGAAA TTGAAGAGTT GAAAGAAAAC CAGGTACCTG 420  
 GTGACAGAGG ACTGGTATTA AAATCTAGAG CAAAGCATCA TGCAATATCT GCTGTATTAG 480  
 CAAACCAATT CATTTTGTCT GATAAACCTT TGATAGTTCA ATATGAAGTA AATTTTCAAG 540  
 ATGGTATGTA TTGTGAGGCT GCATACATTA AACTCTAGC AGACACTGAT GATTGTGATT 600  
 TGGAAAACTT TTATGATAAA ACATCCTATA TCATTATGTT TGGACCAAGT AAATGTGGAG 660  
 AAGATTATAA ACTTCATTTT ATCTTCAGAC ATAAACATCC CAAACTGGA GTTTTCGAAG 720  
 50 AGAAACATGC CAAACCTCCA GATGTAGACC TAAAAAAGTT CTTTACAGAC AGGAAGACTC 780  
 ATCTTTATAC CCTTGTGATG AATCCAGATG ACACATTTGA GGTGTAGTGT GATCAACACG 840  
 TTGTAACAAA AGGAAGCCTC CTAGAGGATG TGGTCTCTCC TATCAAACTT CCGAAAGAAA 900  
 TTGAAGATCC CAATGATAAA AAACCTGAGG AATGGGATGA AAGAGCAAAA ATTCCTGATC 960  
 55 CTCTGCGCGT TAAACAGAAA GACTGGGATG AAAGTGAACC TGCCCAATA GAAGATTCAA 1020  
 GTGTTGTAA ACCTGCTGGC TGGCTTGATG ATGAACCAAA ATTTATCCTT GATCCTAATG 1080  
 CTGAAAAACC TGATGACTGG AATGAAGACA CGATGGGAGA ATGGGAGGCA CCTCAGATTG 1140  
 TTAATCCAGC ATGTGGGATT GGGTGTGGTG AGTGGAACCC TCCATGATA GATAACCCAA 1200  
 AATACAAAGG AGTATGGAGA CCTCACTGG TCGATAATCC TAACTATCAG GGAATCTGGA 1260  
 60 GTCTCGAAA AATTCTTAAT CCAGATTATT TCGAAGATGA TCATCCATT CTCTGACTT 1320  
 CTTCAGTGC TCTGTGTTA GAGCTTGGT CTATGACCTC TGATATCTAC TTGATAATT 1380  
 TTATTATCTG TTCCGAAAAG GAAGTAGCAG ATCACTGGGC TGCAGATGGT TGGAGATGGA 1440  
 AAATAATGAT AGCAAAATGCT AATAAGCCTG GTGTATTAAA ACAGTTAATG GCAGCTGCTG 1500  
 AAGGGCACCC ATGGCTTTGG TTGATTTATC TTGTGACAGC AGGAGTGCCA ATAGCATTAA 1560  
 65 TTACTTCATT TTGTTGGCCA AGAAAAGTAA AGAAAAAACA TAAAGATACA GAGTATAAAA 1620  
 AAACCGACAT ATGTATACCA CAAACAAAAG GAGTACTAGA GCAAGAAGAA AAGGAAGAGA 1680  
 AAGCAGCCCT GAAAAACCA ATGGACCTGG AAGAGGAAAA AAAGCAAAAT GATGTTGAAA 1740  
 TGCTTGAAAA AGAAGAGGAA AGTGAACCTG AGGAAAAGAG TGAAGAAGAA ATTGAAATCA 1800  
 TAGAAGGGCA AGAAGAAAGT AATCAATCAA ATAAGTCTGG GTCAGAGGAT GAGATGAAAG 1860  
 AAGCAGATGA GAGCACAGGA TCTGGAGATG GGCCGATAAA GTCAGTACGC AAAAGAAGAG 1920  
 70 TACGAAAGGA CTAAGACTAGA TTGAATATT TTTAATTCOC GAGAGGATGT TTGGCATTTG 1980  
 AAAAAACAG ATGCCAGAAC TGAACCTTAA TCAGTCTGCA CATCGTGGT CTAATATCTA 2040  
 GCAACATTAT ATTCTTTCAG ACATTATTAT TAGTCTTCA TTCCGAGGA AAAAGAAGCA 2100  
 ACTTTGAAAT TACCTCATCT TTGAATTAG AATAAAAGTG GCACATTACA TATCGGATCT 2160  
 AAGAGATTAA TGCTATACA AGTTACACAG TTTTAGTTGT TTGGAGATAG TTTTGGTTTG 2220  
 75 TACCAACAAA AATAATATGT AGCAGCTTCA TTGCTATTGG AAAAAATCAGT TATTGGAATT 2280  
 TCCACTAAA TGCTATACA ACAATATAAC TGGTAGTTCT ATAATAAAA TGAGCATATG 2340  
 TTCTGTTGTG AAGAGCTAAA TGCAATAAAG TTTCTGTATG GTTGTTTGAT TCTATCAACA 2400  
 ATTGAAGATG TTGATATAGA CCCACATTTA CCTAGTTTGT GTCAAATTAT AGTTACAGTG 2460  
 AGTTGTTTGT TAAATATATA GATTCTTTA AGGACATGCC TGTTCATAA AATCACTGGA 2520

TTATATTGCA GCATATTTTA CATTGAATA CAAGGATAAT GGGTTTTATC AAAACAAAAA 2580  
 GATGTACAGA TTTTTTICA AGTTTTATA GTTGCTTAT GCCAGAGTGG TTTACCCCAT 2640  
 TCACAAAAAT TCTTATGCAT ACATTGCTAT TGAATAATAA ATTTAAATAT TTTTTCATCC 2700  
 TGAATAAAAA

5

SEQ ID NO:160 PFA1 Protein sequence:  
 Protein Accession #: NP\_004353.1

10

1 11 21 31 41 51  
 | | | | |  
 MHFQAFWLCL GLLFISINAE FMDDDVETED FEENSEEDV NESELSSEIK YKTPQPIGEV 60  
 YFAETFDSDGR LAGWVLSKAK KDDMDDEEISI YDGRWEIEEL KENQVPGDRG LVLKSRAKIH 120  
 AISAVALAKPF IFADKPLIVQ YEYVNFQDGD CCGAYIKLLA DTDDLILENF YDKTSYIMF 180  
 GPDKCGEDYK LHFIFRHKHP KTGVFEEKHA KPFVDLKKF FTDRKTHLYT LVMNPDDTFE 240  
 VLVDTQTVVNK GSLLEDVVPF IKPFKEEDP NDKKPEEWDE RAKIPDPSAV KPEDWDESEP 300  
 AQIEDSSVVK PAGWLDDEPK FIPDPNAEKP DDWNEDTGE WEAPQILNPA CRIGCGEWKP 360  
 FMIDNPKYKG VWRPPLVDNP NYQGIWSPRK IPNDYFEDD HPFLITSFSA LGLELWSMTS 420  
 DIYFDNFIC SEKEVADHWA ADGWRWKIMI ANANKQVVLK QLMAAAEGHP WLWLILYVTA 480  
 GVPLALTSF CWPBRKVKKH KDTEYKKTDI CIPQTKGVLE QEEKEKAAL EKPMDLSEEK 540  
 KQNDGEMLEK EEESEPEEKS EEEIEIEGQ EESNQSNKSG SEDEMKEADE STGSGDGPVK 600  
 SVRKRRVRKD

25

SEQ ID NO:161 PEZ9 DNA SEQUENCE

Nucleic Acid Accession #: NM\_005932  
 Coding sequence: 75-2216 (underlined sequences correspond to start and stop codons)

30

35

40

45

50

55

60

65

70

1 11 21 31 41 51  
 | | | | |  
 GCGGAGCGCG CGCTCCACG GAAAGCAGCA GGGCAGGGAT CTGCGTTGGA GGAAGGGACT 60  
 GCTCTGGTGC TAGAATGCTG TGCGTCGGAA GGCTGGGCGG CTGGGAGGCC AGAGCAGCAG 120  
 CTCTCCGCCG CGCCGGGGCG GGCCGGGGAA GCCTCGAAGC CGGGATCCGG GCCCGAAGGG 180  
 TCAGCACCAG CTGGTCTCCG GTGGGCGCGC CCTTCAATGT CAAGCCCCAG GGCAGCGCGT 240  
 TGGACCTGTT CGGCGAGCGG GCGCGTCTTT TTGGAGTTCC TGAGCTGAGT GCCCCAGAAG 300  
 GATTTTCATAT TGCACAAGAA AAAGCCTTGA GAAAGACAGA ATTGCTGTG GACCGTGCAT 360  
 GTTCCACCCC ACCTGGGCCC CAGACCGTGC TGATCTTGA TGAGCTCTCG GATTCCTTAT 420  
 GCAGAGTGGC CGACTTGGCT GATTTTGTGA AAATCGCTCA CCTGAGCCA GCATTCAGAG 480  
 AAGCTGCGGA AGAAGCTTGT AGAAGTATTG GCACCATGTT AGAGAAGTTG AACACAAATG 540  
 TGGATTTATA TCAAGATTGT CAAAAATTAC TAGCTGATAA AAAACITTTG GATTCCTTGT 600  
 ATCCAGAAAC AAGGCGAGTG GCTGAACGTG TTATGTTTGA TTTGAAATTT AGTGAATCC 660  
 ATCTAGACAA ACAAAAGCGT AAAAGAGCAG TGGACCTCAA TGTTAAATC TTGGATTGA 720  
 GTAGTACATT TCTTATGGGA ACCAATTTTC CCAACAAGAT TGAGAAGCAT CTCTTACCAG 780  
 AACACATTGG TCGTAACCTT ACATCTGCTG GGGATCATAT CATAATGAT GGTCTCCACG 840  
 CAGAAATCAC AGATGACTTG GTGCGAGAAG CTGCTTATAA AATTTTCTTT TATCCCAATG 900  
 CTGGTCAATT GAAATGTTTA GAAGAATTGC TCAGCAGCAG AGATCTTCTG GCAAAAGTTGG 960  
 TGGGTATTTC CAGCTTTTCT CACAGGGCTC TCCAAGGAAC GATAGCTAAA AATCCAGAGA 1020  
 CTGTATGCA GTTCTTTGAA AAACATCTCT ACAACITTTT TGAAGAAGCT CTGAAAGATT 1080  
 TTGAGATGAT ACGAGGGATG AAAATGAAAC TGAATGCTCA AAATCCGAA GTAATGCCCT 1140  
 GGGACCCGCC TTACTACAGT GGTGTGATTG GTGCAGAAAG GTATAATATT GAGCCAGGCC 1200  
 TATATTGCCG GTTTTCTCT CTGGAGCAT GCATGGAAGG CCTGAATATT TTGCTTAACA 1260  
 GACTGTGGG GATTTCATTA TATGCAGAGC AGCCTGCAAA AGGAGAGGTG TGGAGCGAAG 1320  
 ATGTCCGAAA ACTGCTGTTT GTTCATGAAT CTGAAGGATT GTTGGGGTAC ATTTACTGTG 1380  
 ATTTTITTA GCGAGCAGAC AAACCATATC AGGATTGCCA TTTCATATC CGTGAGGCA 1440  
 GACTAAAGGA AGATGGAGAC TATCAACTCC CACTTGTAGT TCTTATGCTG AATCTTCCC 1500  
 GTTCTCAAG GAGTTCTCCA ACTTGTCTAA CTCTGGCAT GATGGAAAAT CTTTTCATG 1560  
 AAATGGGACA TGCCATGCT TCAATGCTAG GACGTAATCG TTACCAACAC GTCACTGGGA 1620  
 CCAGTGCCC TACTGATTTT GCTGAGGTTT CTCTATTCT GATGGAGTAC TTTGCAATG 1680  
 ATTATCGAGT AGTTAACCAA TTGCCAGAC ATTATCAGAC TGGACAGCCA CTGCCAAAA 1740  
 ATATGGTGTG TCGTCTTTGT GAATCTAAAA AGGTTTGTGC TGCAGCTGAT ATGCAACTTC 1800  
 AGGTCTTTTA TGCCACTCTG GATCAATCT ACCATGGGAA GCATCCCTCG AGGAATTCAA 1860  
 CCACAGACAT TCTCAAGGAA ACACAAGAGA AATTCTATGG CCTACCATAT GTTCCAAATA 1920  
 CTGCTGGCA GCTCGGATTC AGCCACCTCG TGGGGTATGG TGCTAGATAT TACTCTTACC 1980  
 TCATGTCCAG AGCGGTGCCC TCCATGGTTT GGAAGGAGTG TTTTCTACAG GATCCTTTCA 2040  
 ACAGGGCTGC CGGGGAGCGC TATCGCAGGG AGATGCTGGC CCACGGTGGG GGCAGGGAGC 2100  
 CCATGCTCAT GGTGGAAGGT ATGCTCAGA AGTGCTCTTC TGTGATGAC TTGTAAGTG 2160  
 CCTCGTTTC CGACTTGGT CTGGAATTCG AAACCTTCTT CATGGATTCT GAATAAAGA 2220  
 AACACTCTAC ACCTCTAATC AAGGTATGT AGTAATGACT TTGTATAAAA TGCTACAGCT 2280  
 GTGAGAGCTT GTTCTGATT GTTTCATTGT TCGCTTCTGT AATTCTGAAA AACTTTAAAC 2340  
 TGGTGAAGCT TGAATAAAT AATTGTGTTT AATTAATAAA AAAAAAAAAA AA

75

SEQ ID NO:162 PEZ9 Protein sequence:  
 Protein Accession #: NP\_005923.1

1 11 21 31 41 51  
 | | | | |  
 MLCVGRLLGL GARAAALPPR RAGRGSLEAG IRARRVTSW SPVGAAFNVK PQGRSLDLFG 60  
 ERARLFGVPE LSAPEGFHIA QEKALRKTEL LVDRACSTFP GPQTVLIFDE LSDSLCRVAD 120

5 LADFVKIAHP EPAFREAAEE ACRSIGTMVB KLNTNVDLYQ SLQKLLADKK LVDSLDPETR 180  
RVAELFMFDF EISGHIHLDKQ KRKRAVDLNV KILDLSSTFL MGTNFPNKIE KHLLPEHRR 240  
NFTSAGDHII IDGLHAESPD DLVREAA YKI FLYPNAGQLK CLELLSSRD LLAKLVGYST 300  
FSHRALQGTI AKNPETVMQF LEKLSDKLSE RTLKDFEMIR GMKMKLNAQN SEVMPWDPY 360  
10 YSGVIRAERY NIEPSLYCPF FSLGACMEGL NILLNRLLGI SLYAEQPAKG EVWSEDVRKL 420  
AVVHESEGLL GYTYCDFQR ADKPHQDCHF TIRGRLKED GDYQLPLVVL MLNLPSSRS 480  
SPTLLTPGMM ENLFHEMGA MHSMLGRTRY QHVTGTRCPT DFAEVP SILM EYFANDYRVV 540  
NQFARHYQTG QPLPKNMVSR LCESKKVCAA ADMQLQVFA TLDQIYHGKH PLRNSTTDIL 600  
KETQEKFYGL PYVPNTAWQL RFSLVGYGA RYYSYLSRA VASMVWKECF LQDPFNRAAG 660  
ERYRREMLAH GGGREPMLMV EGMLQKCPV DDFVSALVSD LDLDFTFLM DSE

## SEQ ID NO:163 PEZB DNA SEQUENCE

15 Nucleic Acid Accession #: AF103907  
Coding sequence: none (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
20 ACAGAAGAAA TAGCAAGTGC CGAGAAGCTG GCATCAGAAA AACAGAGGGG AGATTGTGT 60  
GGCTGCAGCC GAGGGAGACC AGGAAGATCT GCATGGTGGG AAGGACCTGA TGATACAGAG 120  
GAATTACAAC ACATATACCT AGTGTTTCAA TGAACACCAA GATAAATAAG TGAAGAGCTA 180  
GTCCGCTGTG AGTCTCCTCA GTGACACAGG GCTGGATCAC CATCGAAGGC ACTTCTGAG 240  
25 TACTCAGTGC AGCAAAGAAA GACTACAGAC ATCTCAATGG CAGGGGTGAG AAATAAGAAA 300  
GGCTGCTGAC TTTACCATCT GAGGCCACAC ATCTGCTGAA ATGGAGATAA TTAACATCAC 360  
TAGAAACAGC AAGATGACAA TATAATGTCT AAGTAGTGAC ATGTTTTCG ACATTTCAG 420  
CCCTTTTAAA TATCCACACA CACAGGAAGC ACAAAGGAA GCACAGAGAT CCTGGGAGA 480  
AATGCCCGGC CGCCATCTTG GGTATCGAT GAGCCTCGC CTGTGCTGG TCCCGCTGT 540  
GAGGGAAGGA CATTAGAAA TGAATTGATG TGTTCCTTAA AGGATGGGCA GGAACACAGA 600  
30 TCCTGTGTG GATATTATTT TGAACGGAT TACAGATTG AAATGAAGT ACAAGTGAG 660  
CATTAACCAAT GAGAGGAAAA CAGACGAGAA AATCTTGATG GCTTCACAAG ACATGCAACA 720  
AACAAATGG AATACTGTGA TGACATGAGG CAGCCAAGCT GGGGAGGAGA TAACCAAGGG 780  
GCAGAGGGTC AGGATCTTGG CCTGCTGTC TAACTGTGC GTTCATAACC AAATCATTT 840  
ATATTTCAA CCCTCAAAAC AAAGCTGTG TAATATCTGA TCTCTACGGT TCCTTCTGG 900  
35 CCCAACATTC TCCATATATC CAGCCACACT CATTTTTAAT ATTTAGTTC CAGATCTGTA 960  
CTGTGACCTT TCTACACTGT AGAATAACAT TACTCATTT GTTCAAGAC CCTTCGTGT 1020  
GCTGCTAAT ATGTAGTGA CTGTTTTC TAAGGAGTGT TCTGGCCAG GGGATCTGT 1080  
AACAGGCTGG GAAGCATCTC AAGATCTTTC CAGGGTATA CTACTAGCA CACAGCATGA 1140  
TCATTACGGA GTGAATTATC TAATCAACAT CATCTCAGT GTCTTGCC ATACTGAAAT 1200  
40 TCATTGCCA CTTTGTGCC CATTCTCAAG ACCTCAAAAT GTCATTCAT TAATATCACA 1260  
GGATTAACTT TTTTTTAA CCTGGAAGAA TCAATGTGA CATGCAGTA TGGGAATTGA 1320  
ATTACATAAT TTGTTTCCA GTGCAAAGAT GACTAAGTCC TTTATCCTC CCTTTGT 1380  
GATTTTTTT CAGATATAAA GTTAAATGTC TTAGCCTTGT ACTGAGGCTG TATACAGCAC 1440  
AGCCTTCCC CATCCCTCCA GCCTTATCTG TCATCAACAT CAACCCCTCC CATACCACT 1500  
45 AAACAAAATC TAACITGTAA TTCTTGAAC ATGTCAAGGAC ATACATTATT CCTTCTCCT 1560  
GAGAAGCTCT TCCTGTCTC TTAATCTAG AATGATGTAA AGTTTGAAT AAGTTGACTA 1620  
TCTTACTTCA TGCAAAAGAG GGACACATAT GAGATTATC ATCAGATGAG ACAGCAATA 1680  
CTAAAGTGT AATTGTATA TAAGAGTTTA GATAAATATA TGAATGCAA GAGCCACAGA 1740  
GGGAATGTT TTGGGGCAGC TTGTGAAGCC TGGGATGTGA AGCAAAGGCA GGGAACTCA 1800  
50 TAGTATCTTA TATAATATC TTCAATTCTC TATCTATC ACAATATCCA ACAAGCTTT 1860  
CACAGAATTC ATGCAAGTGA AATCCCAAA GTTAACTTT ATCCATTTC TGGTGAAGTC 1920  
GCTTTAGAA TTTGGCAAA CATACTGCTC ACTTATCTCA ACTTTGAGAT GTGTTGTCC 1980  
TTGTAGTTAA TTGAAGAAA TAGGGCACTC TTGTAGGCA CTTTAGGTT CACTCTGTC 2040  
AATAAGAAAT TTACAAAGAG CTACTCAGGA CCAAGTTGTA AGAGCTCTGT GTGTGTGTGT 2100  
55 GTGTGTGTGT GAGTGTACAT GCAAAAGTGT GCCTCTCTCT CTGACCCAT TATTTCAGAC 2160  
TTAAACAAG CATGTTTCA AATGGCACTA TGAGCTGCA ATGATGTATC ACCACCATAT 2220  
CTCATTATTC TCCAGTAAAT GTGATAATAA TGTATCTGT TAACATAAAA AAAGTTGAC 2280  
TTCACAAAG CAGCTGGAAG TGGACAACCA CAATATGCAT AAATCTAACT CCTACCATCA 2340  
GCTACACACT GCTTGACATA TATTGTTAGA AGCACTGCG ATTTGTGGGT TCTCTTAAGC 2400  
60 AAAATACTTG CATTAGTCT CAGCTGGGCG TGTGCATCAG GCGGTTGAG AAATATTCAA 2460  
TCTCAGCAG AAGCCAGAAT TTGAATTCCC TCATCTTTTA GGAATCATTT ACCAGTTTG 2520  
GAGAGGATTC AGACAGCTCA GGTGCTTCA CTAATGTCTC TGAATCTCTG TCCCTCTTG 2580  
TGTTATGGA TAGTCCAAATA AATAATGTTA TCTTGAAGT GATGCTATA GGAGAGAATA 2640  
TAAGAAGTCT GAGTGATATC AACATTAGGG ATTCAAAGAA ATATTAGATT TAAGCTCACA 2700  
65 CTGGTCAAAA GGAACCAAGA TACAAAGAAC TCTGAGCTGT CATGCTCCC ATCTCTGTGA 2760  
GCCACAACCA ACAGCAGGAC CCAACGATG TCTGAGATCC TTAATCAAAG GAAACCAAGT 2820  
TCATGAGTTG AATTCTCTA TTATGGATGC TAGCTTCTGG CCATCTCTGG CTCTCTCTT 2880  
GACACATATT AGCTTCTAGC CTTGCTTCC ACGACTTTTA TCTTTCTCC AACACATCGC 2940  
70 TTACCAATCT TCTCTGCT CTGTTGCTTT GGACTCCCC ACAAGAAATT CAACGACTCT 3000  
CAAGTCTTTT CTTCATCCC CACCACTAAC CTGAATGCT AGACCTTAT TTTTATTAAT 3060  
TTCCAATTGA TGCTGCTAT GGGCTATATT GCTTTAGATG AACATTAGAT ATTAAAGCT 3120  
CAAGAGGTTT AAAATCCAA TCAATTCTT CTCTTCTT CACCTCCTG CTCTCTCC 3180  
TATATTCTG ATGCTACTGA ACAGCATGGT CCCCATGTA GCCATGCAA TGAGAAACCC 3240  
AGTGGCTCT TGTGGTACAT GCATGCAAGA CTGCTGAAGC CAGAAGGATG ACTGATTACG 3300  
75 CCTCATGGGT GGAGGGGACC ACTCTGGGC CTTCGTGATT GTCAGGAGCA AGACCTGAGA 3360  
TGCTCCTGCT CTTCGCTGCT CTCTGATCT CCCTTTCTA ATGAAGATCC ATAGAATTG 3420  
CTACATTGGA GAATTCAAAT TAGGAATCA CATGTTTAT CTGOCCTATC AATTTTTTAA 3480  
ACTGTCTGAA AATTAAGTTT TTCAAAATC TGTCTGTGA AATTACTTTT TCTACAGTG 3540  
TCTTGGCATA CTATATCAAC TTGATTCCT TGTACAACCT TTCTTACTC TTTATCACC 3600

5 AAAGTGGCTT TTATCTCTT TATTATTATT ATTTCTTTT ACTACTATAT TACGTTGTTA 3660  
 TTATTTTGT CTCTATAGTA TCAATTTATT TGATTTAGTT TCAATTTATT TTTATTGCTG 3720  
 ACTTTTAAAA TAAGTGATTG GGGGGGTGGG AGAACAGGGG AGGGAGAGCA TTAGGACAAA 3780  
 TACCTAATGC ATGTGGGACT TAAACCTAG ATGATGGGTT GATAGGTGCA GCAAACCACT 3840  
 ATGGCACACG TATACCTGTG TAACAAACCT ACACATTCTG CACATGTATC CCAGAACGTA 3900  
 AAGTAAAAATT TAAAAAAAAG TGA

10 PEZ8 Protein sequence:

Protein Accession #: none

SEQ ID NO:164 PEZ8 DNA SEQUENCE

Nucleic Acid Accession #: AB028945

Coding sequence: 1-3785 (underlined sequences correspond to start and stop codons)

15 1 11 21 31 41 51  
 20 ATGATGATGA ACGTCCCGG CGGAGGAGCG GCCCGGGTGA TGATGACGGG CTACAATAAT 60  
 GGTGCTGTG CCCGGAATTC TCTCTACAGT GACTGCATTA TTGAGGAGAA GACGGTGGTC 120  
 25 CTGCAGAAAA AAGACAATGA GGGCTTTGGA TTGCTGCTTC GAGGGGCCAA AGCTGACACA 180  
 CCCATTGAAG AATTACACAC AACACCGGCT TTCCACGCC TACGTACCT GGAGTCCGTG 240  
 GATGAAGGTG GGGTGGCGTG GCAAGCCGGA CTAAGGACCG GGGACTTCTT GATTGAGGTT 300  
 AACAAAGAGA ATGTTGTCAA AGTCCGCCAC AGGCAGGTGG TGAACATGAT CCGGCAGGGA 360  
 GGGAAATCAC TGGTCTTAA GTGTGTCAAG GTGACCAGGA ATCTGGACCC CGACGACACC 420  
 30 GCCAGGAAGA AAGCTCCGCC GCTCCAAAG CGGGCACCGA CCACAGCCCT CACCTGCGC 480  
 TCCAGTCCA TGAAGTCCA GCTGGAGGAG CTCTGGGATA AAGATAAACC CGAGGAGATA 540  
 GTCCCGGCTT CCAAGCCCTC CCGCGTGTG GAGAACATGG CTGTGGAACC GAGGGTGGCG 600  
 ACCATCAAGC AGCGGCCAG CAGCCGTGC TTCCCGCGG GCTCAGACAT GAACTCTGTG 660  
 TACGAACGCC AAGGAATGCG GTGTATGACG CCCACTGTTC CTGGGAGGCC AAAAGCCCCG 720  
 35 TTCTGGGCA TCCCTCGAGG TACGATGCGA AGGCAGAAAT CAATAGACAG CAGAATCTTT 780  
 CTATCAGGAA TAACAGAGGA AGAGCGGCAG TTTCTGGCTC CTCCAATGCT GAAGTTTACC 840  
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 40 ACCAGGTCCG ACACGCTGGC CACCATGATG AGGGAGAAGG GGATGTACTT CAGGAGAGAG 1080  
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 45 GTGAAGGAGC CGTCCACAG CAGCAGCGGC AAGAGCAGCC AGGCAGCAG CATGGAGATC 1380  
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 60 GAGGTGGAGA TGAAGCCAGA CAGCTCGCCG TCCGAGGTGC CAGAAGGTGT TTCCGAAACC 2280  
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 65 GAAATTTCAA ATAGTTTGA TATCCCGAT GACCGGCAG CTCTGTGCC GGCTCTCTCA 2520  
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 AGCCGGAGTA GCAGCGACCA CCACCTCGAG ACGACACGCA CTATCTCCAC CGTGTCTAGC 2760  
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 70 GGGCAAGCAT TTATGGTTGA CAAACCCCA GTACCTCTA AGCCAAAAAT GAAGCCATC 2880  
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 10 CCTGCAGCTG CTTTGCAGT AGATGCTCC AGATGCTTT GTCCAGTGG CCATCATGGG 4320  
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 15 CCAAGCAGAT GTCACATGGA GTTAGTCAA GCACAAAGTC ACATTTCCAC AATGGAGGGG 4560  
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 AGAATCTCTT TTAATGAAG ATGTCTTGT CTCTGCAAAG ATCAGAGCAG GTGAGCATCC 4740  
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 20 GGGTGAGCTG CTCTGCTGAG ACAGTCTTT TGCTCTGGGA GGCCAGGGAA GATGGTACTT 4920  
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 25 TCCCGGAGT CCGTCCACC CATAACAATA CCTCGAATTT CCAAAGAGGG TCAACAGATG 5220  
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 30 CTAGAATGAA CACATAAAAT TTAGCAATTT AAAATCTTTC TTTACTGCAA GTTTAAATAG 5460  
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 40 TGCTGAGGCT GCGCCATATT TTAGAAAATG TAAAAATGGT GGTITGGCCA TTAATTTGTC 6060  
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 GGGCTACAG TTGTATTAC CTCTGTGCTC AGTGCCAGGC AAAACACTAG CTCAAAGGAG 6180  
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 45 ACATGGCACT AACCAACAGC AAGCTGGCTG CAAGACTAAA GAGCTGATAA CATAGTTTAT 6360  
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 55 TATGAAACA GCAAGCATTA TCCAGTTGAT CTGGCAATGA CTTTITGTT GTGGGCCACA 6960  
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 60 AGGTGTGGT TCTGATTGCA AACAAACAGT GAACACTGTC TGAATTAAC AAAAAAGCTGC 7260  
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 65 TTTCTTTTG TTTGGGTGG AAGCAGCGGT GCCCGGAGG GCCAGCCAGA TCCGACCT 7560  
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 75 TGGCGAAGT GAAATGTGTT CTGTATTGT AGACAACCAT GTACCATGC AAGTAGGTGA 8160  
 ACATTCCACA GTGGCTGGGT GACCACAGCA GCTGCATGCA GACAGGACTG CCGTGTCTT 8220  
 GTGGGGAATC AGAGAAATT CAAACTGTT TCTCAGACT CCGCAGATCT CATCACTTTG 8280  
 ATTCTATC CATGCTGAT TGGTATTTT GTTATCGTT CCGTGAACCT GTTCTACATT 8340  
 CCACAGTCT TACCGTTTTA TGTCAAAAT TACAACAATC CCGTCCATT GATTCCACTC 8400  
 TGGAACTCT TTTTCATGCC AATTTTGAAA TTTAATACG AGCCTTCAAA TAAACACAGA 8460

AAAGAAAAAA AAAAAAAAAA AAAAAAAAAA

5 SEQ ID NO:165 PEZ3 Protein sequence:  
Protein Accession #: BAA82874.1

1 11 21 31 41 51  
10 MMNNVPGGGA AAVMMTGYNN GRCPRNSLYS DCIEEKTVV LQKKDNEGFG FVLRGAKADT 60  
PIEEFIPIPA FPALQYLESV DEGGVAWQAG LRTGDFLIEV NNENVVKVGH RQVVNMIRQG 120  
GNHLVLKVVV VTRNLDPDDT ARKKAPPPPK RAPTTALT LR SKSMTSELEE LVDKDKPEEI 180  
VPASKPSRAA ENMAVEPRVA TIKQRPSSRC FPAGSDMNSV YERQGIAMVT PTVPGSPKAP 240  
15 FLGIPRGITMR RQKSIDSRIF LSGITEERQ FLAPPMLKFT RSLMPDTSE DIPFPQSV 300  
PSPPPSPFTT YNCPKSFTPR VYGITKPAFN QNSAAKVSPA TRSDTVATMM REKGMVFRRE 360  
LDRLSLDSED LYSRNAGPQA NFRNKRQMP ENPYSEVGKI ASKAVYVPAK PARRKGMLVK 420  
QSNVEDSPEK TCSIPFTII VKEPSTSSSG KSSQGSMEI DPQAPPEPSQ LRPDESITVS 480  
SPFAAALAGA VRDREKRLEA RRNSPAFLST DLGDEDVGLG PPAPRTSPM FPBEGDFADE 540  
20 DSABQLSSPM PSATPREPEN HFVGGAESA PGEAGRPLNS TSKAQGPSS PAVPSASSGT 600  
AGPGNYVHPL TGRLLDPSSP LALALSARDR AMKESQGGPK GEAPKADLNK PLYIDTKMRP 660  
SLDAGFTVT RQNTGRPLRR QETENKYETD LGRDRKGGDK KNMLDIMDT SQQKSAGLLM 720  
VHTVDATKLD NALQDEDEKA EVEMKPDSSP SEVEGVSET EGALQISAAP EPTTVPGRTI 780  
25 VAVGSMEEAV ILFPRIPPPP LASVDLDEDF IFTEPLPPL EFANSFDIPD DRAASVPALS 840  
DLVKQKSDT PQSPSLNSSQ PTNSADSKKP ASLSNCLPAS FLFPFESFDA VADSGIEVD 900  
SRSSSDHLE TSTSTVSS ISTLSSEGGE NVDCTVYAD GQAFMVDKPP VPPKPKMKPI 960  
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LSGPKANVIS ELNSILQOMN REKLAKPGEV LDSPMGAKSA SLAPSPFEM STISGRSTI 1080  
VITFVRPGTS QPTLQSRPP DYESTSGTR RAPSPVVSPT EMNKETLPAP LSAATASPS 1140  
30 ALSDVFSLS QPFSGLFGL NPAGRSRSPS PSILQQPISN KPFTTKPVHL WTKPDVADWL 1200  
ESLNLGHEKH AFMDNEDGS HLPNLQKEDL IDLGVTRVGH RMNIERALKQ LLDR

## SEQ ID NO:166 PEZ4 DNA SEQUENCE

35 Nucleic Acid Accession #: NM\_000024  
Coding sequence: 220-1461 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
40 ACTGCGAAGC GGCCTCTTCA GAGCACGGGC TGGAACTGGC AGGCACCGCG AGCCCTAGC 60  
ACCCGACAAG CTGAGTGTGC AGGACGAGTC CCCACACAC CCACACACCA GCGCGTGAAT 120  
GAGGCTTCCA GCGCTCCGCT CGCGGCCCGC AGAGCCCGCG CGTGGGTCCG CCGCTGAGG 180  
CGCCCCCAGC CAGTGCCTT ACCTGCCAGA CTGCGCGCCA TGGGGCAACC CGGGAACGGC 240  
AGCGCTTCT TCTGGCACC CAATAGAAGC CATGCGCCGG ACCACGACGT CACGCAGCAA 300  
45 AGGGAACGAG TGTGGGTGT GGGCATGGGC ATCGTCATGT CTCTCATCGT CCGTGCCATC 360  
GTGTTTGCCA ATGTGCTGGT CATCACAGCC ATTGCAAGT TCGAGOGTCT GCAGACGGTC 420  
ACCAACTACT TCATCACTTC ACTGGCTGT GCTGATCTGG TCATGGGCGT GGCAGTGGT 480  
CCCTTTGGGG CCGCCATAT TCTTATGAAA ATGTGGACTT TTGGCAACTT CTGTTGCGAG 540  
TTTTGGACTT CCATTGATGT GCTGTGCGTC ACGGCCAGCA TTAGAGCCCT GTGCGTGATC 600  
50 GCAGTGGATC GCTACTTTC CATTACTTCA CTTTCAAGT ACCAGAGCCT GCTGAACCA 660  
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CCCATTCAGA TGCATGGTA CCGGGCCACC CACCAGGAAG CCATCAACTG CTATGCCAAT 780  
GAGACTGCT GTGACTTCTT CACGAACCAA GCCTATGCCA TTGCTCTTC CATGTTGTCC 840  
TTCTACGTTT CCTGTGTAT CATGGTCTTC GTCTACTCCA GGGTCTTTCA GGAGGCCAAA 900  
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55 GTGGAGCAGG ATGGGCGGAC GGGGCATGGA CTCGCGAGAT CTTCGAAGTT CTGCTTGAAG 1020  
GAGCACAAG CCTCAAGAC GTTAGGCATC ATCATGGGCA CTTTCAACCT CTGCTGGCTG 1080  
CCCTTCTTCA TGTTAACAT TGTGCATGTG ATCCAGGATA ACCTCATCCG TAAGGAAGTT 1140  
TACATCTCC TAAATTGGAT AGGCTATGTC AATCTGGTT TCAATCCCT TATCTACTGC 1200  
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60 AAGGCTATG GGAATGGCTA CTCCAGCAAC GGCAACACAG GGGAGCAGAG TGGATATCAC 1320  
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65 TGTATAGAGA TATGCAGAAG GAAGGCATC CTTCTGCCIT TTTATTTT TTAAGCTGTA 1620  
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CATGGAATTT GTAAGTTAT GTCTAAAGAG CTTTAGTCT AGAGGACCTG AGTCTGCTAT 1740  
ATTTTCATGA CTTTCCATG TATCTACCT ACTATTCAAG TATTAGGGGT AATATATTGC 1800  
TGCTGGTAAT TTGTATCTGA AGGAGATTT CTTCTCTACA CCTTGGACT TGAGGATTT 1860  
70 GAGTATCTG GACCTTTTCA CTGTGAACAT GGACTCTTCC CCCACTCTC TTATTTGCTC 1920  
ACACGGGGTA TTTTAGGCAG GGATTTGAGG AGCAGCTTCA GTTGTTTTCC CGAGCAAAGG 1980  
TCTAAAGTTT ACAGTAAATA AAATGTTTGA CCATG

75 SEQ ID NO:167 PEZ4 Protein sequence:  
Protein Accession #: NP\_000015.1

1 11 21 31 41 51



5 MGQPGNGSAF LLAPNRSHAP DHDVTQQRDE VVVVGMGIVM SLVLAIVFG NVLVITAIK 60  
 FERLQTVINY FITSLACADL VMGLAVVFPF AAHILMKMWT FGNFWCEFWT SIDVLCVTAS 120  
 IETLCVAVD RYFAITSPFK YQSLLTKNKA RVILMVWIV SGLTSFLPIQ MHWYRATHQE 180  
 AINCYANETC CDFFINQAYA IASSIVSFYV FLVIMVFVYS RVFQBAKRQL QKIDKSEGRF 240  
 HVQNLSQVEQ DORTGHGLRR SSKFCLKEHK ALKTLGIIMG TFLCWLPPF IVNVHVIQD 300  
 NLRKEVYL LNWIGYVNSG FNPLIYCRSP DFRIFQELL CLRSSLKAY GNGYSNGNT 360  
 GBQSGYHVEQ EKENKLLCED LPGTEDFVGH QGTVPSPDND SQGRNCSTND SLL

10

## SEQ ID NO:168 PEZ1 DNA SEQUENCE

15 Nucleic Acid Accession #: NM\_004457  
 Coding sequence: 143-2305 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
 20 GAATTGTTG TTGGGAAGGA CTGGGGAAAC AGCTGTAACA TTGGCCACCC TCAGAAGCTG 60  
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 GCTAAAACAT ACCATCAACC CTATCTTTT ATATTTTATA CATTCTTAA TATCATTTA 240  
 25 TACTATTTA ACATACATTC CGTTTATTT TTCTCCGAG TCAAGACAAG AAAAAACAAA 300  
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 TTGGATGGT TTGGCTTCAG TATTATACC TGGATGTGAT ACITTAGATA AAGTTTTTAC 420  
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 30 TTGGCTTCC TATGAAGATG TCTTTGTCG AGCCTTTAAT TTGGAAAATG GATTACAGAT 600  
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 TAAAGAACTC TTACAAACAA AGTTGAAGGA TATAGTTCT TTGGTCCAC GCGTCGGCA 840  
 35 CATCATCACT GTTGATGGA AGCCACCGAC CTGGTCCGAC TTCCCAAGG GCATCATTGT 900  
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 50 AAGTTGACA ATGGGGTACT ACAAATAATG AGCAAAAAA AAAGCTGATT TCTCTGAAGA 1800  
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 55 TGAAGTAGCT CGAAAGAAAG GACTTAAAGG GACTTGGGAG GAGCTGTGTA ACAGTTGTGA 2100  
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 TACCACCTAT GACTGTACT GTCAATATG GAATTTTCT GAATCATATT GGGGAAGCAG 2580  
 65 TGATTTTAAA ACCTCAAGT TTTAAACATG ATTTATATGT TCTGTATAAT GTTCAGTTTG 2640  
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 70 TGTCTGTAT GCATTGTAGA GAAATAAATA TACCCATACT TATGTTTAAA GAAAGTTGAGA 2880  
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 GGGAGATAAC ACAGCATGTG TAGCACCAGT TGATAATTGG TCTCTAGTAG CTTACTGTCA 3060  
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 GGAAGAAATC TGAAGAGAG GATAGAATT AAAGAACAAG AGTATATAAA GTTATCTTT 3180  
 75 GAATATTG TGACTATAT GTACATTGAG TTATCTATAT TTGTAACAA ATTAGTCATG 3240  
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 TTAGAATGTA TTGATGATA GCATTCTAC TAAGACACAT GAGAATTAA CTTTATAACC 3480  
 GCGTGAATTA AGATTAAAT CATAGGTTT GATGTCAATG TTGAAGTTAT TTGTAATCA 3540  
 GAAACCTTGC TTGTGTGATA CATAGTAAGT CTCTTCAATT ATTACTGCTT GCCTGTTGTT 3600



ATATCTGGAT TATCAAAAGC AATAGTGCAC CAATTAAGAT GTGCTCAAAAT CAGGACTTAA 3660  
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SEQ ID NO:169 PEZ1 Protein sequence:  
Protein Accession #: NP\_004448.1

10 1 11 21 31 41 51  
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NSKPD SAYRS VNSLDGLASV LYPGCDTLDK VFTYAKNKPK NKRLLGTREV LNEEDEVQPN 120  
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MYNFQVLVTL ATLGGPAIVH ALNETEVTNI ITSKELLQTK LKDIVSLVFR LRHITVDGK 240  
PFTWSDFFPKG IIVHTMAAVE ALGAKASMEN QPHSKPLPSD IAVIMYTSGS TGLPKGVMS 300  
HSNIAGITG MAERIPELGE EDVYIGYLP AHVLELSAEL VCLSHGCRIG YSSPQTLADQ 360  
SSKIKKSGKG DTSMLKPTLM AAVPEIMDRI YKNVMNKVSE MSSQRNLFI LAYNYKMEQI 420  
SKGRNTPLCD SFVFRKVRSL LGGNIRLLC GGAPLSATTQ RFMNICFOCP VQGGYGLTES 480  
AGAGTISEVW DYNTGRVGPAP LVCEIKLKN WEEGGYFNTD KPHPRGEILI GGQSVTMGY 540  
20 KNEAKTKADF SEDENGQRWL CTGDIGEFEP DGCLKIDRK KDLVKLQAGE YVSLGKVEAA 600  
LKNLPLVDNI CAYANSYHSY VIGFVVPNQK ELTELARKKG LKGTWEELCN SCEMENEVLK 660  
VLSEAAISAS LEKPEIPVKI RLSPEPWTP TGLVTDAPKL KRKELKTHYQ ADIERMYGRK

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SEQ ID NO:170 PC07 DNA SEQUENCE  
Nucleic Acid Accession #: none found  
Coding sequence: 38-1075 (underlined sequence corresponds to start and stop codon)

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GTGCAACATA CCAGGCAACT TCATGTGCAQ CAATGGACGG TGCATCCCGG CGCCCTGGCA 180  
GTGTGACGGG CTGCTGACT GCTTCGACAA GAGTGATGAG AAGGAGTGCC CCAAGGCTAA 240  
GTGGAATGTG GGCCCAACCT TCTTCCCTTG TGCCAGCGGC ATCCATTGCA TCATTGGTCG 300  
CTTCCGGTGC AATGGGTTTG AGGACTGTCC CGATGGCAGC GATGAAGAGA ACTGCACAGC 360  
AAACCCCTCTG CTTTGTCTCA CCGCCCGCTA CCAGTGCAGG AACGCCCTCT GTATTGACAA 420  
GAGCTTCATC TCGATGGGAC AGAATAACTG TCAAGACAAC AGTGATGAG AAAGCTGTGA 480  
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TTACCCGACG ATCAGCTATG CCATCATCGG CAGCTCCGTC ATTTTGTGTC TGGTGGTGGC 600  
CCTGCTGGCA CTGCTCTTGC ACCACGAGCG GAAGCGGAAC AACCTCATGA CGCTGCCCGT 660  
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45 TGCGTGGTAT GACCTTCTCT CACCGCCCTA CTCTTCTGAC ACGGAATCTC TGAACCAAGC 900  
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CAGCAGGCTC CTGAGCGTGG AAGACACGAG CCACAGCCCG GGGCAGCCTG GCCCCAGGA 1020  
GGGCACTGCT GAGCCAGGGC ACTCTGAGCC CAGCCAGGGC ACTGAAGAG TATAAGTCCC 1080  
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50 TGCTCATGGG AAGCTCTTTA AGCACCTGTA AGGATGTCTC AAGTTACAGT TTGGGATATT 1200  
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60 CTCAITCTGA GAGCTTTCTT CAGCAGCATA TATCATCAGC CTCATCTTAA AATAGGAGG 1800  
GAGCCCTCC CATGAGTTTA TCCAAGTTCT CAGCTCCTAA AATGCAGGCT GCCAAGAGCC 1860  
TACACCTGCC CTGGCTCTAC AGCCACTTAC CTGGTTTCTG GACTGTCAAC CTCCAGCTG 1920  
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TGATCCCTGT CTGTAGACTT TTCTTTCTTT TTTTAAACAA ATCCAAAGGA TGTTCAGAA 2940

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AAGCTAGCCA CTGGTATTTT GTTTTGTTTA AAAAAAAAAA GAAAGAAAGA AAGAAAGAAA 3000
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CATTTTCATCT CCTGTGAGTC AGAAGGGCTT TATTTCTCCC TTGTATGGGG CCCCTTCTTC 3180
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GAAACCTTGG CCAAGAAAAA GGTGGCGAGA ATTCTCCACA CCAGAAAAAA ACGCGCCGGG 4020
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25 SEQ ID NO:171 PCQ7 Protein sequence:  
Protein Accession #: none found

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1 11 21 31 41 51
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EKECPKAKSK CQPTFFPCAS GIHCTIGRFR CNGFEDCPDG SDEENCANP LLCSTARYHC 120
KNGLIDKSP ICDGQNCQD NSDEESCESS QEPGSGQVTV TSENQLVYYP SITTYAIIGSS 180
VIFVLVALL ALVLHHRKR NMLMTLPVHR LQHPVLLSRL VVLDHPEHCN VTYNVNNGIQ 240
YVASQAAGG SEVSGSPSYS EALLDQRPAN YDLPPFPYS DTESLNQADL PFYRSRSGSA 300
NSASSQAASS LLSVEDTSHS PQQPGPQEGT AEPRDSEPSQ GTEEV

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40 SEQ ID NO:172 PEL3 DNA SEQUENCE  
Nucleic Acid Accession #: NM\_005858.1  
Coding sequence: 57-1535 (underlined sequences correspond to start and stop codons)

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CTCAGTACTA CCGCTGCCCC GTGCCCCAGT ACGCCCGGAG GGTCTCTGAG CAGGCTTCCA 240
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AGAAAGCACT GTGCATCAAC TTGAACCTGG GGACCTTCCT CGTGGGAGCT CGGCTGGCCG 360
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AACCAGTGTG TCTGCCCAAC CCAGGCATGA TGCTGCAGCC AGAACAGCTC TGCTGGATTT 1200
CCGGGTGGGG GCGCAACGAG GAGAAAGGGA AGACCTCAGA AGTGTCTAAC GCTGCCAAGG 1260
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CAGCCATGAT CTGTGCCGGC TTCTGTCAGG GGAACGTCGA TTCTTGGCAG GGTGACAGTG 1380
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TGCCATCTCT TGCAAGGCTGC AGTGGCTCCC CTGCCCAAGC TGCTCTCCCT AACCCTTGT 1740
CCCAAGGGG TGATGGCCGG CTGGTGTGCG GCACTGGCGG TCAATTGTGG AAGGAAGAGG 1800
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TGAGCATGGA GCTGTCACTT CTCACTGCTC GGATGACTTG AGATGAAAAA GGAGAGACAT 1920
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5 GAGGGAAGCA ATTGAAAAGG AACTTGCCCT GAGCACTCCT GGTGCAGGTC TCCACCTGCA 2220  
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 ATGTCGGCCT CTTGAGGCTT GATAGTCATT GGAAATTGAG GTCCATGGGG GAAATCAAGG 2400  
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 CTGAGTTCAA AGCCATCTTT

10 SEQ ID NO:173 PEL3 Protein sequence

Protein Accession #:

NP\_005647.1

15 1 11 21 31 41 51  
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 SNFVVCTQPR SPSCTVCTSK TKKALCITLT LCTPLVGAAL AAGLLWKPFG SKCSNSGIEC 120  
 DSSGTCINPS MWCDGVSHCP GGEDENRCVR LYGNFNLQM YSSQRKSWHP VCQDDWNENY 180  
 GRAACRDMGY KNNFYSSQGI VDDSGSTSPM KLMTSAGNVD IYKLYHSDA CSSKAVVSLR 240  
 CLACGVNLNS SRQSRIVGGE SALPGAWFWQ VSLHVQNVHV CGGSIITPEW IVTAHCHVEK 300  
 PLNNFWWYD FAGILRQSPM FYGAGYQVQK VLSHPNYDSK TKNDLALMK LQKPLTFNDL 360  
 VKPVCLNPG MMLQPEQLCW ISGWATEEEK GKTSEVLNAA KVLIIETQRC NSRVVYDNL 420  
 TPAHICAGFL QSNVDSQGD SGGPLVTSNN NIWMLIGDTS WSGCAKAYR PGVYGNVHVF 480  
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25 SEQ ID NO:174 PB4 DNA SEQUENCE

Nucleic Acid Accession #:

AF694767

Coding sequence:

130-1086 (underlined sequences correspond to start and stop codons)

30 1 11 21 31 41 51  
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 ATAGGCTCC CTGGTTTAGA AGAGGCTCAG TTCTGGTTGG CCTTCCCATP GNGCTCCCTC 240  
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 CTGCATGAGC ACATGTATAT ATTTCTTTGC ATGCTTTTCA GCATGACAT CCTCATCTCC 360  
 ACCTCATCCA TGCCCAAAAT GCTGGCCATC TTCTGGTTCA ATTCCACTAC CATCCAGTTT 420  
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 GTACTTACGT TGCTCTGTGT CACCAAAATP GGTGTGGCTG CTGTGGTGGG GGGGGCTGCA 600  
 CTGATGGCAC CCCTTCTGT CTTCATCAAG CAGCTGCCCT TCTGCCGCTC CAATATCCTT 660  
 TCCCATCTCT ACTGCTTACA CCAAGATGTC ATGAAGCTGG CCTGTGATGA TATCCGGGTC 720  
 AATGTCTGT ATGGCTCTAT CGTCATCATC TCCGCCATTG GCCTGGACTC ACTTCTCATC 780  
 TCCCTCTCAT ATCTGCTTAT TCTTAAGACT GTGTGGGCT TGACACGTGA AGCCAGGGCC 840  
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Protein Accession #: SEQ ID NO:175 PBJ4 PROTEIN SEQUENCE  
 not available, cloned at Eos

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AFDRYVAICH	PLRHATVLT	PRVTIGVAA	VVRGAALMAP	LPVFIKQLPF	CRSNILSHSY	180
CLHQDVMLKA	CDIRVNVVY	GLIVIISAIG	LDSLLISFSY	LLILKTVLGL	TREQAARAFG	240
TCVSHVCVFF	IFVVFVIGLS	MVHRFSKRRD	SPLFVILANI	YLLVFPVLNP	IVYGVKTKBI	300
RQRILRLPFI	ATHASEP					

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Nucleic Acid Accession #: SEQ ID NO:176 PM72 DNA SEQUENCE  
 NM\_004824.1  
 Coding sequence: 57-1544 (underlined sequences correspond to start and stop codons)

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TGGTGGTGGC	GCGGCGCGGG	GCTCGCTCTC	GGGAGGCGCG	GCGCGGATCT	CGCGGCGCAG	180
GCGGCGCGGG	CGGAGGTGGG	GTCGCGCGCG	GGAGGCGGCT	CGAGCTTCGT	GCTGCGCGCT	240
CGCTCTTGGG	CTCTCTGCTG	CAGGAGGAGT	GTGACTATGT	GCAGATGATC	GAGGTGCAGC	300
ACAAGCAGTG	CCTGGAGGAG	GCCCAGCTGG	AGAATGAGAC	AATAGGCTGC	AGCAAGATGT	360
GGGACAACCT	CACCTGCTGG	CCAGCCACCC	CTCGGGGCCA	GGTAGTTGTC	TTGGCCTGTC	420
CCCTCATCTT	CAAGCTCTTC	TCCTCCATTC	AAGGCCGCAA	TGTAAAGCCG	AGCTGCACCG	480
ACGAAGGCTG	GACGCACCTG	GAGCCTGGCC	CGTACCCCAT	TGCCGTGTGT	TTGGATGACA	540
AGGCAGCGAG	TTTGGATGAG	CAGCAGACCA	TGTCTACGG	TTCTGTGAAG	ACCGGCTACA	600
CCATTGGCTA	CGGCTCTGCC	CTCGCCACCC	TTCTGTGTGC	CACAGCTATC	CTGAGCCTGT	660
TCAGGAAGCT	CCACTGCACG	CGGAACACCA	TCCACATGCA	CCTCTTCATA	TCCTTCATCC	720
TGAGGCTGCG	CGCTGTCTTC	ATCAAAGACT	TGGCCCTCTT	CGACAGCGGG	GAGTCGGACC	780
AGTGCTCCGA	GGGCTCGGTG	GGCTGTAAAG	CAGCCATGGT	CTTTTCCCAA	TATTGTGTCA	840
TGGCTAACTT	CTCTGGCTG	CTGGTGGAGG	GCCTCTACCT	GTACACCCCT	CTTGCCGCTCT	900
CCCTCTCTCT	TGAGCGGAAG	TACTTCTGGG	GGTACATACT	CATCGGCTGG	GGGGTACCCT	960
GCACATTCAC	CATGCTGTGG	ACCATCGCCA	GGATCCATTT	TGAGGATTAT	GGTCTGCTCA	1020
GGTGCTGGGA	CACCATCAAC	TCCTCACTGT	GGTGGATCAT	AAAGGGCCCC	ATCCTCACCT	1080
CCATCTATGT	AAAGTTCATC	CTGTTTATTT	GCATCATCCG	AATCCTGCTT	CAGAAATGCG	1140
GGCCCCAGTA	TATCAGGAAG	AGTGACAGCA	GTCCATCTCT	AAGGCTAGCC	AGGTCACAC	1200
TCCTGCTGAT	CCCCCTGTTT	GGAGTACACT	ACATCATGTT	CGCCTTCTTT	CCGGACAATT	1260
TTAAGCTTGA	AGTGAAGATG	GTCTTTGAGC	TCGTCTGGGG	GTCTTTCCAG	GGTTTGTGG	1320
TGGCTATCTT	CTACTGCTTC	CTCAATGGTG	AGGTGCAGGC	GGAGCTGAGG	CGGAAGTGGC	1380
GGCGCTGGCA	CCTGCAGGGC	GTCTGGGGCT	GGAAACCCAA	ATACCGGCAC	CCGTCCGGAG	1440
GCAGCAACGG	CGCCACGTGC	AGCACGCGAG	TTTCCATGCT	GACCCGGGTC	AGCCAGGTG	1500
CCCGCCGCTC	CTCCAGCTTC	CAAGCCGAAG	TCTCCCTGGT	CTGACCCACA	GGATCCACGC	1560
CCAGCGCGCC	CCTCCCGCCC	CTTCCCACTC	GCAGCAGAGC	CGGGGACAGC	AGGCTGCCCC	1620
GGGCGCGCCA	GGCCCGGCCC	TGGGCTCGGA	GGCTGCCCCC	GGCCCGCTGG	TCTCTGGTCC	1680
GGCACTCTCT	AGAGAACGCA	GCCCTAGAGC	CTGCTGGAGC	CGTTTCTAGC	AAGTGAGAGA	1740
GATGGGAGCT	CCTCTCTCTG	AGGATGCAGG	TGGAACCTAG	TCATTAGACT	CCTCTCCCAA	1800
AGGCCCCCTA	CGCCAAATCA	GGGCAAAAG	TCTACATACT	TTTATCTCTG	CTCTGCCCCC	1860
TGCTGGCTCT	TCTGCCCAAT	TGGAGGAAAG	CAACCGGTGG	ATCCTCAAAC	AACACTGGTG	1920
TGACCTGAGG	GCAGAAAGGT	TCTGCCCGGG	AAGGTCACCA	GCACCAACAC	CACGGTAGTG	1980
CCTGAATAAT	CACCAATGCT	GTCAAGTTCC	TTTGGGTAA	GCATTACCAC	TCAGGCATTT	2040
GACTGAAGAT	GCAGCTCACT	ACCTTATTTCT	CTCTTTACGC	TTAGTTATCA	GCCTTTTAAA	2100
GTGGGTATT	CTGGAGTTT	TGTTTGGAGA	GCACACCTAT	CTTAGTGGTT	CCCCACCGAA	2160
GTGGACTGGC	CCCTGGGTCA	GTCTGGTGGG	AGGACGGTGC	AACCCAAGGA	CTGAGGGACT	2220
CTGAAGCCTC	TGGAAATGA	GAAGGCAGCC	ACCAGCGAAT	GCTAGGTCTC	GGACTAAGCC	2280
TACCTCTCTC	CCAAGTCTCA	GTGGCTTCAT	CTGTCAAGTG	GGACTCTGTC	ACACCAAGCA	2340
TTCTTATCTC	TCTGTGCTGT	GGAAGCAACA	GGAATCAAGA	GACTGCCCTC	CTTGTCCACC	2400
CACCTATGTG	CCAAGTGTG	TAACTAGGCT	CAGAGATGTG	CACCCATGGG	CTCTGACAGA	2460
AAGCAGATCC	TCACCTTGCT	ACACATACAG	GATTGAACT	CAGATCTGTC	TGATAGGAAT	2520
GTGAAAGCAC	GGACTCTTAC	TGCTAACTTT	TGTGTATCGT	AACCAAGCAG	ATCCTCTTGG	2580
TTATTGTGTT	ACCACTGTGA	TTATTAATGC	CATTATCCCT	GAATTCCTCT	TGCCACCCCA	2640
CCCTCCCTGG	AGTGTGGCTG	AGGAGGCCTC	CATCTCATGT	ATCATCTGGA	TAGGAGCCTG	2700
CTGGTCACAG	CCTCTCTCTG	CTGCCCTTCA	CCCCAGTGGC	CACCTAGCTT	CCTACCCACA	2760
CCTCTGCCAG	AAGATCCCTT	CAGGACTGCA	ACAGGCTTGT	GCAACAATAA	ATGTTGGCTT	2820
GGAAAAAA	AAAA					

75

SEQ ID NO:177 PM72 Protein sequence  
 Protein Accession #: JC2195

80

1	11	21	31	41	51	
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RLGLGSSLEQ	ECDYQVMIEV	QHKQCLEEAQ	LENETIGCSK	MWDNLTCWPA	TPRGQVVVLA	120

5 CPLLKLFSS IQGRNVSRSC TDEGWTHLEP GPYPLACGLD DKAASLDEQQ TMYGVSVRTG 180  
 YTGIGYGLSLA TLLVATAILS LFRKLHCTRN YIHMLFISF ILRAAAVFIK DLALFDSGES 240  
 DQCESESVGC KAAMVFPQYC VMANFPWLLV EGLYLYTLA VSFFSERKYF WGYLIGWGV 300  
 PSTFTMVVIT ARIHFEDYGL LRCWDTINSS LWWIKGPIL TSILNVFILF ICIRILLQK 360  
 LRPFDIRKSD SSPYSRLARS TLLLIPLFGV HYIMFAFPD NFKPEVKMVF ELVVGSPQGF 420  
 VVAILYCLFN GEVQAELERR WRRWHLQGV LGMNPKYRHP GSGNGATCST QVSMLTRVSP 480  
 GARRSSSPQA EVSLV

10 Nucleic Acid Accession #: AL133819  
 Coding sequence: 1-2070 (underlined sequences correspond to start and stop codons)

SEQ ID NO:178 BFF8 DNA SEQUENCE

15 1 11 21 31 41 51  
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 ATGAGCGGTG CGGGGGTGGC GGCTGGGACG CGGCCCCCA GCTCGCGGAC CCGGGGTCT 60  
 CGGCGCCGGC GCCAGCCGCC CTCTGTGGGC GTCCAGTCTT TGAGGCCGCA GAGCCCGCAG 120  
 CTCAGGCAGA GCGACCCGCA GAAACGGAAC CTGGACCTGG AGAAAAGCCT GCAGTTCCTG 180  
 CAGCAGCAGC ACTCGGAGAT GCTGGCCAAG CTCCATGAGG AGATCGAGCA TCTGAAGCGG 240  
 GAAACAAGG GTGAGCCGGC GCGGGGCCCT AGCCGGGCC TGCCTCCCA GGCACACTCA 300  
 20 ACATGCCGC TCCCGCAGCA CAGAAACACA GCCATCAACT CCAGCACAGC CTTGGGCTCA 360  
 GGGGGAACAC AGGACGGGGA GCGCCTCCAG ACTGTCTTG CCACTCTGCG TGCACTGGCC 420  
 CCTGTATGCC AACCCACTGG GTACAGGTTT TGGGGGACCT GGACAGATGC CGTACCTCT 480  
 AGCCGTGGCT TGACAGATGT ATGCAGCCAA GCACAGCAGG TGCTGCTCTC GGGAAAGCCA 540  
 GGCCTGAGG TCATGTCAGG GCGGCAGGTG GCCACAGGCT GCTCCCGAGA CCTCCCTCCT 600  
 25 CCAAGTAGAG CTGAATGGG AAGGAACCCC TGGACAGCC OCTGCCCTGC TAGATCTTTG 660  
 CTTAGATTTG CTGCTGTGGC CAGGCCCAGG ATTTCCAGCC CTATGGCTCT GAGTCTCTAC 720  
 ATGCTGGGGG CCCAGGGGAT ATGGACACAC TCCATCCAGG GATCCCTTCC TGCCATCTGG 780  
 GCAGCAACCA TGGGGACAAA GGGAGGAAGC AGAGTCTGT TTCTTGGCCA CTTGTCCAA 840  
 GCATCTCCCC ATCTGACAG CGGCCCCAC CCAGCCAGG ATCTCTGGCT GTGTCTCAA 900  
 30 GCTCACTTCC CATATATCTT GGGGCTGGG CTGACATCAG GAGGACATCT GACTGGTGA 960  
 TGGAGCCAGC CTGGGAACAT CGCAGCTGGG GCACTGCTTA GGGCTCTCCC TTCCAGGGA 1020  
 GACATGGAGA AGGGGGTTGA GGGAGGGGCC TTCCCTAGCC GCTGTGGCAA CTCCAGTGAG 1080  
 CTGTTCTGGG CAAAGTGTGG CCCAAGTGGG CAGCCCCAGC CTGCACTGCG TGGGAGCGCT 1140  
 GACAGGACAC GGGAGAGGCG CATGCTTTCC CTGCGGACCT GCTGTTCCAT GTGTCCAA 1200  
 35 CCTCTCTGCT TTCCAGATGG CCCCTCAGGA AACCACTTT CCAGGGGCTC TGCTCCCTTG 1260  
 GGCCTCTGCT GGGTCTGCAT CAACGGAGTG TGGGTAGAGC CGGGAGGACC CAGCCCTGCC 1320  
 AGGCTGAAGG AGGGCTCCTC ACCGACACAC AGGCCAGGAG GCAAGCCTGG GCGTCTTGG 1380  
 GCGGTAGAGC CGGACATGCT GCGCTCTCCT GCAGACAGCC TCTCCATGTC AAGCTTCCAG 1440  
 TCTGTCAAGT CCATCTCTAA TTCAGCAAC TCTCAAGGCA AGGCCAGGCC CAGCCCGGCC 1500  
 40 TCTCTCAACA AGCAAGATTC AAAAGCTGAC GTCTCCAGA AGGCGGACCT GGAAGAGGAG 1560  
 CCCCTACTTC ACAACAGCAA GCTGGACAAA GTTCTCTGGG TACAAGGGCA GGCCAGAAAG 1620  
 GAGAAAGCAG AGGCCTCTAA TGCAGGAGCT GCCTGTATGG GGAACAGCCA GCACAGGCC 1680  
 AGGCAGATGG GGGCGGGGGC ACACCCCCCA ATGATCTTGC CCTTTCCTCT GCGAAGAGCC 1740  
 ACCACACTTA GGCAGTGGCA AGTGCTCATC CGGAGCTGT GGAATACCAA CTCTCTGAG 1800  
 45 ACCCAGAGC TGGCGCAGCT CAAGTCCCTC CTGGAAGGGA GCCAGAGGCC CAGGCCAGCC 1860  
 CCGGAGGAAG CTAGCTTTCC CAGGGACCAA GAAGCCACGC ATTTCCCCAA GTCTCCACC 1920  
 AAGAGCCTCT CCAAGAAATG CTTGAGCCCA OCTGTGGCGG AGCGTGCCAT CTTGCCCGCA 1980  
 CTGAAGCAGA CCCCAAGAA CAACTTTGCC GAGAGGCAGA AGAGGCTGCA GGCAATGCAG 2040  
 AAACGGGGCC TGCAATGCTC AGTGCTTGA

SEQ ID NO:179 BFF8 Protein sequence:

Protein Accession #:

T43457

55 1 11 21 31 41 51  
 | | | | | |  
 MSGAGVAAGT RPPSSPTFGS RRRRQRFPVG VQSLRPQSPQ LRQSDPQKRN LDLEKSLQFL 60  
 QQQHSEMLAK LHEEIEHLKR ENKGEPARGF RPALPFOAHS TLPLPQHRNT AINSSTRLSG 120  
 GGTQDGEPLQ TVLAHLAALA PQCQPSGYRF WGTWTDAAIS SRGWMLCSQ AQHVLISGSP 180  
 60 GPEVIAGRQV ATGCSFDLPP PSRAEMGRNP WDSFPCPARSL PQIAAVARPR ISSPHALSPH 240  
 MLGAQGIWTH SIQGSIPAIV AATMGTKGGS RVLFPCHLSK ALPHPDSPGH PAQDPGLWSQ 300  
 AHFPLSLGLG LITSGHITGG WSQPGNIAAG AVFRALPSQG DMEKGVGGP FPSRCGNSE 360  
 LFWAKGCPSP QPQPCSGADA DRTREEMLS LGTCCSMCPK PSCFPDGPSP NMLSRASAPL 420  
 GARWVINGV WVEPGGSPSA RLKEGSSRTH RFGGKRGRLA GGSADTVRSF ADSLSMSSFO 480  
 65 SVKSYNSAN SQKARPQPG SPNKQDSKAD VSQKADLEK PLLHNSKLDK VPGVQQAARK 540  
 EKAEASNAGA ACMGNSQHQC RQMGAGAHFP MILPLPLRKP TTLRQCEVLI RELWVTLNLLQ 600  
 TQELRLHLSL LBGSRQRPQA PEEASFPRDQ EATHFPKVST KSLSKKCLSP PVAERAILPA 660  
 LKQTPKNINFA ERQKRLQAMQ KRLERSVL

70 Nucleic Acid Accession #: NM\_012319.2  
 Coding sequence: 138-2405 (underlined sequences correspond to start and stop codons)

SEQ ID NO:180 BCR4 DNA SEQUENCE

75 1 11 21 31 41 51  
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 CTGTCGCCGA ATTCGGCACG AGACCCGGTG TTCCGCGCTG GTAGAGATT TCGAAGACA 60  
 CCAGTGGGCC CCGTGTGAAC CAAACCTGCG CGCGTGGCCG GCGCGTGGGA CAACGAGGCC 120

5	GCAGAGACGA AGGGCGCAATG GCGAGGAAGT TATCTGTAAT CTTGATCCTG ACCCTTGGCCC 180
	TCTCTGTACAC AAATCCOCTT CATGAACATA AAGCAGCTGC TTCCOCCAG ACCACTGAGA 240
	AAATAGTACC GAATTTGGAA TCTGGCATTAT ATGTTGACTT GGCAATTTCC ACACGGCAAT 300
	ATCATCTACA ACAGCTTTTC TACCGCTATG GAGAAATAA TTCTTTGTCA GTTGAAGGGT 360
	TCAGAAATTT ACTTCAAAAT ATAGGCATAG ATAAGATTAA AAGAAATCCAT ATACACCATG 420
	ACCACGACCA TCACCTCAGAC CACGAGCATC ACTCAGACCA TGAGCGTCAC TCAGACCATG 480
	AGCATCACTC AGACCAAGAG CATCACTCTG ACCATGATCA TCACCTCTCAC CATAATCATG 540
	CTGCTTTCTGG TAAAAATAAG CGAAAAAGCTC TTGGCCAGG CCAATGACTCA GATAGTTCCAG 600
10	GTAAAGATCC TAGAAACAGC CAGGGGAAAG GAGCTCACCG ACCAGAACAT GCCAGTGGTA 660
	GAAGGAATGT CAAGGACAGT GTTAGTGCTA GTGAAGTGAC CTCAACTGTG TACAACACTG 720
	TCTCTGAAGG AACTCACTTT CTAGAGACAA TAGAGACTCC AAGACCTGGA AAACCTTTCC 780
	CCAAAGATGT AAGCAGCTCC ACTCCACCCA GTGTACATC AAAGAGCCGG GTGAGCCGGC 840
	TGGCTGGTAG GAAAACAAAAT GAATCTGTGA GTGAGCCCGG AAAAGGCTTT ATGTATTCCA 900
15	GAACACAAA TGAATAATCT CAGGAGTGTT TCAATGCCAT AAAGCTACTG ACATCTCATG 960
	GCATGGGCTC CCAGGTTCCG CTGAATGCAA CAGAGTTCAA CTATCTCTGT CCAAGCATCA 1020
	TCACCAAAAT TGATGCTAGA TCTTGTCTGA TTCAATACAG TGAAGAAGAG GCTGAATATC 1080
	CTCAAAAGAC CTATTCATTA CAAATAGCCT GGGTTGGTGG TTTTATAGCC ATTTCCATCA 1140
	TCAGTTCTCT GTCTCTGCTG GGGGTATCTT TAGTGCTCTT CATGAATCGG GTGTTTTTCA 1200
	AAATTTCTCT GAGTTCTCTT GTGGCACTGG CCGTTGGGAC TTGAGTGGT GATGCTTTTT 1260
20	TACACCTTCT TCACACTTCT CATGCCAAGTC ACCACCATAG TCAZAGCCAT GAAGAACCAG 1320
	CAATGGAAT GAAGAAGAGA CCACCTTTCA GTCACTCTGT TTCTCAAAAC ATAGAAGAAA 1380
	GTGCTATTTT TGATTTCCAG TGGAAGGGTC TAACAGCTCT AGGAGGCCGT TATTTCAATG 1440
	TTCTTGTTGA ACATGTCTCT ACATTGATCA AACAATTTAA AGATAAGAAG AAAAGAATC 1500
25	AGAAAGAAC TGAAAAATGAT GATGATGTGG AGATTAAGAA GCAGTTGTCC AAGTATGAAT 1560
	CTCAACTTCT ACAAATGTAG GAGAAAGTAG ATACAGATGA TCGAACTGAA GGCTATTTAC 1620
	GACGAGACTC ACAAGAGCCC TCCCACTTTG ATTTCTCAGCA GCCTGCAGTC TTGGAAGAAG 1680
	AAGAGGTGAT GATAGCTCAT GCTCATCCAC AGGAAGTCTA CAATGAATAT GTACCCAGAG 1740
	GGTGCAAGAA TAAATGCCAT TCACATTGCC ACGATACACT CGGCCAGTCA GACGATCTCA 1800
30	TTCAACACCA TCACGACTAC CATCATATTC TCCATCATCA CCACCACCAA AACCACTATC 1860
	CTCAGACTCA CAGCCAGCGC TACTCTCGGG AGGAGCTGAA AGATGCCGGC GTGCCCACTT 1920
	TGGCTTGGAT GGTGATAATG GGTGATGGCC TGCACAATTT CAGCGATGGC CTAGCAATTT 1980
	GTGCTGCTTT TACTGAAGGC TTATCAAGTG GTTTAAGTAC TTCTGTTGCT GTGTTCTGTC 2040
	ATGAGTTGCC TCATGAATTA GGTGACTTTG CTGTTCTACT AAAGGCTGGC ATGACCGTTA 2100
35	AGCAGGCTGT CCTTTATAAT GCATTGTGAG CCATGCTGGC GTATCTTGGA ATGGCAACAG 2160
	GAATTTTCAT TGGTCATTAT GCTGAAAATG TTTCTATGTG GATATTTGCA CTTACTGCTG 2220
	GCTTATTCAT GTATGTTGCT CTGGTTGATA TGGTACCTGA AATGCTGCAC AATGATGCTA 2280
	GTGACCATGG ATGTAGCCGC TGGGGGTATT TCTTTTACA GAATGCTGGG ATGCTTTTGG 2340
40	GTTTTGAAT TATGTTACTT ATTTCCATAT TTGAACATAA AATCGTGTIT CGTATAAAAT 2400
	TCATGTTAAG GTTTAAATAG TAGAGTAGCT TAAAGAGTTC TCATAGTTTC AGTAGGTCAT 2460
	AGGGAGATGA GTTTGTATGC TGTAATATGC AGCGTTTAAA GTTAGTGGGT TTTGTGATTT 2520
	TTGTATTGAA TATTGCTGTC TGTTACAAAG TCAGTTAAAG GTACGTTTAA ATATTTAAGT 2580
	TATCTATCT TGAGATATAA ATCTGTATGT GCAATTCACC GGTATATACCA GTTTATTATG 2640
45	TAAACAAGAG ATTTGGCATG ACATGTTCTG TATGTTTCAG GGAATAATGT CTTTAAATGT 2700
	TTTTCAAGAA CTAACACAGT TATTCCTATA CTGGATTTTA GGTCTCTGAA GAACTGCTGG 2760
	TGTTTAGGAA TAAGAATGTG CATGAAGCCT AAAATACCAA GAAAGCTTAT ACTGAATTTA 2820
	AGCAAGAGAA TAAAGAGAAA AAGAGAAGAA TCTGAGAAAT GGGGAGGCAT AGATTCTTAT 2880
	AAAATCACA AAATTTGTTG TAAATTAGAG GGGAGAAAT TGAATTTAAG TATAAAAAGG 2940
	CAGAAATAGT ATAGAGTACA TTCAATTAAAC ATTTTGTGCA GGATATTATC CCGTAAAAAC 3000
50	GTAGTGAGCA CTCTCATATA CTAATTAGTG TACATTTAAC TTTGTATAT ACAGAAATCT 3060
	AAATATATTT AATGAATCCA AGCAATATAC ACTTGACCAA GAAATTTGAA TTTCAAAATG 3120
	TTGCTGCGGG TTATATACCA GATGAGTACA GTGAGTAGTT TATGTATCAC CAGACTGGGT 3180
	TATTGCCAG TTATATATCA CCAAAAGCTG TATGACTGGA TGTCTGTTT ACCTGGTTTA 3240
	CAAAATTATC AGAGTAGTAA AACTTTGATA TATATGAGGA TATTAATACT ACATAAGTA 3300
55	TCATTGTATT CGATTTCAGAA AGTACTTTGA TATCTCTCAG TGCTTCAGTG CTATCATTTG 3360
	GAGCAATTTG CTTTATATAC GGTACTGTAG CCATACTAGG CCGTCTGTGT GCATTTCTCTA 3420
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60 Protein Accession #: SEQ ID NO:181 BCR4 PROTEIN SEQUENCE  
NP\_038451

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	PYRYGENNSL	SVESFRKLLQ	NIGIDKIKRI	HIHDDHDHHS	DHEHSDHER	HSDHEHSDH	120
	EHHSDDHHS	HNNHAASGN	KRKALCPDHD	SDSSGKDPN	SQKGARHPE	HASGRNVKD	180
	SVSASEVTST	VYNTVSEGT	FLETIETPRP	GKLFKDVSS	STPPSVTSKS	RVSRLAGRKT	240
70	NESVSEPRKG	PMYSRNINEN	PQECFNAASKL	LTSHGMGIQV	PLANATEFNYL	CPAILNQIDA	300
	RSCLHFTDRT	KAEIPKFTYS	LQIAWVGFI	AISIISPLSL	LGVLVPLMN	RVFFKPLSP	360
	LVALAVGTLS	GDAPLHLLPH	SHASHHSHS	HSEPAEMKXR	GPLPSHLSSQ	NIEESAYFDS	420
	TKWGLTALGG	LYTFMVEHV	LTLIKQFKDK	KKKQKKPEN	DDDVKKKQL	SKYESQLSTN	480
	EKKVDTDDRT	EGYLRADSQE	PSHFDQQPA	VLEEEVMA	HAHPQEVNIE	YVFRGCKNKC	540
75	HSHFDTLQ	SDLLIHSHH	YHILHSHH	QNHHPHSHSQ	RYSREELKDA	GVATLAWMI	600
	MGDLHNFSD	GLAIGAAFT	GLSSGLSTSV	AVFCHLPHE	LGDFAVLLKA	GMTVKQAVLY	660
	NALSAMLAFL	GMATGIFIGH	YAENVSMNIP	ALTAGLPMVY	ALVDMVPEML	HNDASDHGCS	720
	RWGYFFLQNA	GKLLSPGIDL	LISIPFKIV	FRINF			

SEQ ID NO:182 BCY2 DNA sequence

Nucleic Acid Accession #:

NM\_001203

Coding sequence:

274-1782 (underlined sequences correspond to start and stop codons)

5 1 11 21 31 41 51  
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10 CATAACCAAT TGGCTCTGAG CTATGACAA AGAGGAAACA AAAAGTTAAA CTTACAAGCC 240  
TGCCATAAGT GAGAAGCAAA CTCTCTGAT AATCTGCTT TCGGAAGTGC AGGAAAATTA 300  
AATGTGGGCA CCAAGAAAAG GATGGGTGAG AGTACAGCCC CCACCCCGG TCCAAAGGTC 360  
TTGGTTTGA AATGCCACCA CCATTGTCCA GAAGACTCAG TCAACAATAT TTGCAGCACA 420  
GACGGATATT GTTTCAGAT GATAGAAGAG GATGACTCTG GGTTCCTGT GGTCACTTCT 480  
15 GGTTCGCTAG GACTAGAAGG CTCAGATTT CAGTGTGGG ACACCTCCAT TCCTCATCAA 540  
AGAAGATCAA TTGAATGCTG CACAGAAAGG AACGAATGTA ATAAAGACCT ACACCTTACA 600  
CTGCTCCAT TGAATAACAG AGATTTTGT TATGGACCTA TACACCACAG GGCCTTACTT 660  
ATATCTGTA CTGTCTGTAG TTTGCTCTG GTCTTATCA TATTATTTT TTACTTCCG 720  
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20 ATTCTCCTG GAGAATCCCT GAGAGACTTA ATTGAGCAGT CTCAGAGCTC AGGAAGTGGA 840  
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ACAGTTTGA TGAGGCATGA AAACATTTT GGTTCATIG CTGCAGATAT CAAAGGGACA 1080  
25 GGTCTCTGA CCCAGTTGA CTAATCACA GACTATCATG AAAATGGTTC CCTTTATGAT 1140  
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AGTGGCTAT GTCAATTACA CACAGAAATC TTAGTACTC AAGGCAAC AGCAATTGCC 1260  
CATCGAGATC TGAAGAGTAA AAACATCTG GTGAAGAAAA ATGGAACCTG CTGTATTGCT 1320  
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30 ACTCGAGTTG GCACCAAAAG CTATATGCCT CCAGAAGTGT TGGACGAGAG CTTGAACAGA 1440  
AATCACTCC AGTCTTACAT CATGGCTGAC ATGTATAGTT TTGGCTCAT CCTTTGGGAG 1500  
GTTGCTAGGA GATGTGTATC AGGAGGTATA GTGGAAGAAT ACCAGCTCC TTATCATGAC 1560  
CTAGTGCCA GTGACCCCTC TTATGAGGAC ATGAGGGAGA TTGTGTGCAT CAAGAAGTTA 1620  
CGCCCTCAT TCCCAAAACG GTGGAGCAGT GATGAGTGT TAAGGCAGAT GGGAAAACCT 1680  
35 ATGACAGAAT GCTGGGCTCA CAATCTGCA TCAAGGCTGA CAGCCCTGCG GGTAAAGAAA 1740  
ACACTTGCCA AAATGTGAGA GTCCAGGAC ATTAACCTCT GATAGGAGAG GAAAAGTAAG 1800  
CATCTCTGA GAAAGCCAAC AGGTACTCT CTGTTGTGG GCAGAGCAAA AGACATCAAA 1860  
TAAGCATCCA CAGTACAAGC CTGAACATC GTCTGCTTC CAGTGGGT CAGACCTCAC 1920  
CTTTCAGGA CGACCTGGG CAAAGACAGA GAAGCTCCA GAAGGAGAGA TTGATCCGTG 1980  
40 TCTGTTTGA GGCGGAGAAA CCGTGGGTA ACTTGTCAA GATATGATGC AT

SEQ ID NO:183 BCY2 Protein sequence

Protein Accession #:

NP\_001184

45 1 11 21 31 41 51  
MLLRSAKLN VGTEKEDGES TAPTPRPKVL RCKCHHCPE DSVNNICSTD GYCFIMIED 60  
DSGLPVVTS GCLGEGSDFQ CRDTPHQ RSECCERN ECNKDLHPTL PPLKNRDFVD 120  
50 GPIHHRALLI SVTVCSLLV LILFCYFRY KRQETPRYS IGLEQDETYI PPGESLRDLI 180  
EQSQSSGSGS GLPLLVRTI AKQIMVKQI GKGRYGEVWM GKWRGEKVA V KVFITFEAS 240  
WFRTEIYQT VLMRHENILG FLAADIKGTG SWTQLYLTD YHENGSLYDY LKSTILDARS 300  
MLKLAYSVS GLCHLHTEIF STQGKPAIAH RDLKSKNVL KKNGTCCIA D LGLAVKFISD 360  
TNEVDIPNT RVGTIKRYMP EVLDESLNRN HFQSYIMADM YSFGILWEV ARRCVSGGIV 420  
55 EEYQLPYHDL VPSDPSYEDM REIVCIKLR PSFPNRWSSD ECLRQMGKLM TECWAHNPAS 480  
RLTALRVKKT LAKMSESQDI KL

60 SEQ ID NO:184 C8F9 DNA sequence

Nucleic Acid Accession #:

AC005383

Coding Sequence:

329-2751 (underlined sequences correspond to start and stop codons)

65 1 11 21 31 41 51  
GACAGTGTTG GCGGCTGCAC CGCTCGGAGG CTGGGTGACC CGCGTAGAAG TGAAGTACTT 60  
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CCTGGCGGTA GTTCTCCGGA CCTCAGCCGG GTCCGGTCTG GCCGCCCTCT CCCAGGAGAG 180  
70 ACAACACAGT GTCCACGCTG GCAGCCGCGC CCGGGGCGCC CTCTCTGTGA TCCCGTAGCG 240  
CCCTCTGGCC CGAGCCGCGC CCGGCTCTGT GAGTAGAGCC GCCCGGGCAC CGAGCGCTGG 300  
TCGCCGCTCT CTTCTCGTTA TATCAACATG CCCCCTTTCC TGTGCTGGA GCGGCTCTGT 360  
GTTTCTCTGT TTTCCAGAGT GCCCCCATCT CTCCCTCTCC AGGAAGTCCA TGTAAACAAA 420  
75 GAAACCATCG GGAAGATTTC AGCTGCCAGC AAAATGATGT GGTGCTCGGC TGCAGTGGAC 480  
ATCATGTTTC TGTATAGTGG GTCTAACAGC GTCCGGAAAG GGAGCTTTGA AAGGTCCAAG 540  
CACTTTGACA TCACAGTCTG TGACGGTCTG GACATCAGCC CCGAGAGGGT CAGAGTGGGA 600  
GCATTCCAGT TCAGTTCCAC TCCTCATCTG GAATTCGCC TGGATTCAAT TTCAACCCAA 660

50		1	11	21	31	41	51	
		MPPFLLEAV	CVFLFSRVPP	SLFLQEVHVS	KETIGKISAA	SKMMCSAAV	DIMFLLDGSN	60
		SVKSGSFERS	KHFAITVCDG	LDISPERVRV	GAPQFSSTPH	LEFFLDSPST	QQBVARIKR	120
55		MVPRGGRTST	ELALKYLLER	GLPGGRNASV	PQILLIVTDG	KSPGDVPLFS	KQLKRGVTV	180
		PAVGVRFPFW	EEELHALASE	RQSHVLLASE	VEDATNGLFS	TLSSSAICSX	ATYFDCRVEAH	240
		PCERTLTLEW	RFAPGNAFCN	RGRSTLAVL	AARCFPFYSWK	KVFLTHPATC	YTRTCPGPGCD	300
		SQPCQNGGTC	VPEGLDGYQC	LCFLAFTGSE	CNALKLSLEC	KVDLLFLDSD	SAGTITDGLF	360
50		RAKVPVFKRPV	RAVLSSEDSRA	RUGPVATYER	LLNAVVPVGEY	QVFDLVLVSL	GDGIFPRGGT	420
		LTVGSALRQAA	RGFGGSATRT	GQDRPREVVV	LITSEHSEDE	VAGPARHARA	RELLLLGVGS	-480
		EAVRALELEI	TGSPFKHVMY	SPQDQLNQI	PTELQKLCRS	QRGCRTOAL	DLVFLPTEAS	540
		VSQGFENFQM	QSPVRSICAL	FVNPDVDTVQ	GLVVYSGSQV	TAGRLDTKPT	RAAMLRATSO	600
		APYVLGGVSGA	GTHALLHITYDK	PMTVQORGAR	GVPKAVVITVL	GGWGAEADAR	PAQKLNNPNI	660
65		SVLVVGVGVFP	LSSGLRLRAG	VMDTLRHVAA	YADLRHQDQV	LIGLECGEAK	FPQNLCKEFS	720
		CMNEGSCVLQ	NGSYKCRKCD	GWEGPFCHNR	EWSSCSVCVS	QGMILETPLR	HMAFVQEGSS	780
		RTPPSNYREG	LGTETMPTTFW	NVCAPCP				

70 SEQ ID NO:186 PAV1 DNA sequence  
Nucleic Acid Accession #: AF272890  
Coding Sequence: 87-1520 (underlined sequences correspond to start and stop codons)

75 1 11 21 31 41 51  
TGCTACCCGC GCCCGGGCTT CTGGGTGTT CCCCACCC GGGCAGCC TGCCACCC 60  
CCCCCCCCGC GCCTCCGACG CTCGCATGG CCGCGGGGGT GCTCGTCTTG GCGCGCTTCG 120  
AGCGCGGTAA CCTGTGTCG CCGCGACCGC TCCCGCAGG CGCGGCCACC CGCGCGCGCG 180



5 TGCTGGTGGC CGCGTCGCGG CCGGCTCGT TGCTGGCTCC CGCCAGCGAA AGCCCGGAGC 240  
 CGCTGTCTCA GCACTGGACA GCGGCGATGG GTCTGCTGAT GCGGCTCATC GTGCTGCTCA 300  
 TCCTGGCGGG CAATGTGCTG GTGATCGTGG CCATCGCCAA GACGCGCGG CTGCAGACGC 360  
 TCACCAACCT CTTCATCATG TCCCTGGCCA GCGCGGACCT GGTCTATGGG CTGCTGGTGG 420  
 TGCCGTTGCG GGCACCATC GTGGTGTGGG GCGGCTGGGA GTACGGCTCC TTCTTCTGCG 480  
 AGCTGTGGAC CTCAGTGGAC GTGCTGTGCG TGACGGCCAG CATCGAGACC CTGTGTGTCA 540  
 TTGCCCTGGA CGCTACCTC GCCATCACCT CGCCCTTCCG CTACGAGAGC CTGCTGACGC 600  
 GCGCGCGGGC GCGGGGCTC GTGTGCACCG TGTGGGCCAT CTCGGGCTTC GTGTCTTCC 660  
 10 TGCCCATCTC CATGCACTGG TGGCGGGCGG AGAGCGAGCA GCGCGCGCGG TGCTACAACG 720  
 ACCCCAACTG GTCCGACTTC GTACCCAACC GGGCTACGCG CATCGGCTCC TCCGTAGTCT 780  
 CCTTCTACGT GCCCTGTGCG ATCATGGCCT TCGTGTACCT GCGGTTGTC CCGAGGGCCC 840  
 AGAAGCAGGT GAAGAAGATC GACAGCTGCG AGCGCGGTTT CCTCGGCGGC CCAGCGCGGC 900  
 CGCCCTCGCG CTCGCCCTCG CCGCTCCCGG CGCCCGCGCG GCGGCGCGGA CCGCCGCGCC 960  
 CGCGCGCGCG CGCGGCCACC GCGCGCTGG CCAACGGGCG TCGGGGTAAG CGCGGCGCCT 1020  
 15 CGCGCTTCTG GCGCTTACGC GAGCAGAAGG CGCTCAAGAC GTGGGCGATC ATCATGGGCG 1080  
 TCTTACGCT CTGCTGGCTG CCGTCTTCTC TGGCCAAAGT GGTGAAGGCC TTCCACCGCG 1140  
 AGCTGTGTGC CGACCGCTC TTCTTCTTCT TCAACTGGCT GGGCTACGCG AACTCGGCT 1200  
 TCAACCCAT CATCTACTGC CGCAGCCCG ACTTCCGCAA GCGCTTCCAG GCACTGCTCT 1260  
 GCTGGCGCGC CAGGGCTGCC CGCGGCGCG ACAGCGACCA CGGAGACCG CCGCGCGCCT 1320  
 20 CGGCTGTGCT GCGCGGCGCG GAGCCCGCG CATCGCGCGG GCGCGCTCG GACGAGGAG 1380  
 ACAGCAGTCT CCGTGGGCGC ACAGCGCGCG CGCGCTTCTG GAGGCGCTGG CCGCGCTGCA 1440  
 ACAGCGGGCG GCGCGCGGAC AGCGACTCGA GCGTGGAGCA GCGGCTGCG CCGCGCTTCG 1500  
 CCTCGGAATC CAAGGTGTAG GCGCGGCGCG GGGCGCGGGA CTCGCGGCGC GCGTTCGCG 1560  
 25 GGAAGCAGG AGATCTGTGT TTACTTAAAG CCGATAGCAG GTGAATCGA AGCCCAAT 1620  
 CCTCGTCTGA ATCATCGAG GCAAGAGAA AAGCCAGGA CCGTTGCACA AAAAGGAAAG 1680  
 TTTGGAAGG GATGGAGAG TGGCTTGTG ATGTTCCTG TTG

30

Protein Accession #:

 SEQ ID NO:187 PAV1 Protein sequence  
 AA011176

35 1 11 21 31 41 51  
 MGAGVLVLGA SEPNLSSAA PLPDGAATAA RLLVPASPPA SLLPPASESP EPLSQWTAG 60  
 MGLMALIVL LIVAGNVLVI VAIARTFRLQ TLTNLFIMSL ASADLVMLGL VVFPGATIVV 120  
 WGRWYSGSF CELWTSVDVL CVTASIELLC VIALDRYLAI TSPFRYQSL TRARARGLVC 180  
 TWIAISALVS FLPLIMHWR AESDEARRCY NDFKCCDFVT NRAYALASS VSPYVPLCIM 240  
 40 AFVYLVRFB AQKQVKIDS CERRFLGGPA RFPSPSPSEF PAPAPPPGFP RFAAAAATAP 300  
 LARGRAGKRR PSRLVALREQ KALKTLGLIM GVPTLCWLF FLANVVKAFH RELVDFRLFV 360  
 PFNWLGYMS AFNPFIYCRS PDFRKAFOGL LCCARRARR RHATHGRDRP ASGCLARPGP 420  
 PPSFGAASDD DDDVVGATP PARLLEPWAG CNGGAAADSD SSLDEPCRPG PASESKV

45

SEQ ID NO:188 BC02 DNA sequence

Nucleic Acid Accession #: AJ400877

Coding sequence:

81-3080 (underlined sequences correspond to start and stop codons)

50 1 11 21 31 41 51  
 GCGGTCCGCG CACACCTCCC CGGCGCGCGG CGGCCACCGC CCGCACTCCG CCGCCTCTGC 60  
 CCGCAACCGC TGAGCCATCC ATGGGGGTGC GGGCGCGCAA CGTCCCGGG GCGGCTCGGG 120  
 CCGTGTCTGT GCTGCTGCTG CTGCTGCGCG CACTGCTGCT GCTGGCGGGG GCGTCCCGC 180  
 55 CCGGTCCGGG CCGTCCCGCG GGGCGCGCAG AGGATGTAGA TGAGTGTGCC CAAGGGCTAG 240  
 ATGACTGCCA TGCCGACGCC CTGTGTGAGA ACACACCCAC CTCTACAAG TGCTCTGCA 300  
 AGCCTGGCTA CCAAGGGGAA GGCAGGCAGT GTGAGGACAT CGATGAATGT GGAAATGAGC 360  
 TCAATGGAGG CTGTGTCCAT GACTGTTTGA ATATTCCAGG CAATTATCGT TGCATTGTGT 420  
 TTGATGGCTT CATGTTGGCT CATGACGGTC ATAATTGTCT TGATGTGGAC GAGTGCCTGG 480  
 60 AGAACAATGG CGGCTGCCAG CATACCTGTG TCAACGTCAT GGGGAGCTAT GAGTGTGCT 540  
 GCAAGGAGGG GTTTTTCCTG AGTGACAATC AGCACACCTG CATTACCGCG TCGGAAGAGG 600  
 GCGTGAGCTG CATGAATAAG GATCACGGCT GTAGTCACAT CTGCAAGGAG GCCCAAGGG 660  
 GCAGCGTCCG CTGTGAGTGC AGGCTGCTT TTAGCTGGC CAAGAACCAG AGAGACTGCA 720  
 TCTTGACCTG TAACCATGGG AACGGTGGGT GCCAGCACTC CTGTGACGAT ACAGCCGATG 780  
 65 GCGCAGAGTG CAGCTGCCAT CCACAGTACA AGATGCACAC AGATGGGAGG AGCTGCTGTG 840  
 AGCGAGAGGA CACTGTCCG GAGGTGACAG AGAGCAACAC CACATCAGTG GTGGATGGGG 900  
 ATAAACGGGT GAAACGGCG CTGCTCATGG AAACGTGTGC TGTCAACAAT GGAGGCTGTG 960  
 ACCGCACTGT TAAGGATACT TCGACAGGTG TCACTGCGAG TTGTCTGTT GGATTCACTC 1020  
 TCCAGTTGGA TGGGAAGACA TGTAAGATA TTGATGAGTG CCAGACCCG AATGGAGGTT 1080  
 70 GTGATCATTT CTGCAAAAAC ATCGTGGGCA GTTTTGACTG CCGCTGCAAG AAAGGATTTA 1140  
 AATTATTAAC AGATGAGAAG TCTTGCCAG ATGTGGATGA GTGCTCTTTG GATAGGACCT 1200  
 GTGACCCAG CTGCAATCAAC CACCTGGCA CATTGCTTG TGCTTGCAAC CGAGGGTACA 1260  
 CCTGTATGG CTTCACCCAC TGTGGAGACA CCAATGAGTG CAGCATCAAC AACGGAGGCT 1320  
 GTCAGCAGGT CTGTGTGAAC ACAGTGGGCA GCTATGAATG CCAGTGCCAC CCGGGTACA 1380  
 75 AGCTCCACTG GAATAAAAAA GACTGTGTGG AAGTGAAGGG GCTCTGCCC ACAAGTGTGT 1440  
 CACCCCTGTG GTCCCTGCAC TCGCGTAAGA GTGGTGGAGG AGACGGGTGC TTCTCAGAT 1500  
 GTACTCTCG CATCACTCCT TCTTCAGATG TCAACCACT CAGGACAAGT GTAACCTTTA 1560  
 AGCTAAATGA AGGCAAGTGT AGTTTGAAA ATGCTGAGCT GTTTCGCGAG GGTCTGCGAC 1620  
 CAGCACTAC AGAGAAGCAC AGCTCAGTAA AAGAGAGCTT CCGCTACGTA AACCTTACAT 1680  
 80 GCAGCTCTGG CAAGCAAGTC CCAGGAGCCC CTGCGCGACC AAGCACCCCT AAGGAAATGT 1740  
 TTATCACTGT TGAGTTTGAG CTGAAACTA ACCAAAAGGA GTTGACAGCT TCTGTGACC 1800

5 TGAGCTGCAT CGTAAAGCGA ACGGAGAAGC GGCTCCGTAA AGCCATCCGC ACGCTCAGAA 1860  
 AGGCCGTCCA CAGGAGAGCAG TTTCACCTCC AGCTCTCAGG CATGAACCTC GACGTGGCTA 1920  
 AAAAGCCTCC CAGAACATCT GAACGCCAGG CAGAGTCTTG TGGAGTGGGC CAGGGTCATG 1980  
 CAGAAAAACA ATGTGTCACT TGCAGGGCTG GGAACCTATTA TGATGGAGCA CGAGAACGCT 2040  
 GCATTTTATG TCCAAATGGA ACCTTCCAAA ATGAGGAAGG ACAAATGACT TGTGAACCAT 2100  
 GCGCAAGACC AGGAAATCTT GGGGCCCTGA AGACCCAGCA AGCTTGAAT ATGTGTGAAT 2160  
 GTGGAGGTCT GTGTCAACCT GGTGAATATT CTGCAGATGG CTTTGCACCT TGCCAGCTCT 2220  
 GTGCCCTGGG CACGTCTCCAG CCGAAGCTG GTCGAACCTC CTGCTTCCC TGTGGAGGAG 2280  
 GCCTTGGCAC CAAACATCAG GGAGCTACTT CCTTTCAGGA CTGTGAAACC AGAGTTCAAT 2340  
 10 GTTCACTGG ACATTTCTAC AACACCACCA CTCACCGATG TATTCGTTGC CCAGTGGGAA 2400  
 CATACCAGCC TGAATTTGGA AAAAAATAAT GTGTTTCTG CCCAGGAAAT ACTACGACTG 2460  
 ACTTTGAGG CTCCACAAAC ATAACCCAGT CTAAAAACAG AAGATGTGA GGGGAGCTGG 2520  
 GAGATTTCAC TGGGTACATT GAATCCCCAA ACTACCCAGG CAATTACCCA GCCAACACCG 2580  
 AGTGTACGTG GACCATCAAC CCACCCCCCA AGCGCGCAT CCGTATCGTG GTCCCTGAGA 2640  
 15 TCTTCCTGCC CAGGTTCAG GACTGTGGGG ACTATCTGGT GATGCGGAAA ACCTTTCAT 2700  
 CCAATTCGTG GACAACATAT GAAACCTGCC AGACCTACGA ACGCCCATC GCCTTCACT 2760  
 CCAGGTCAA GAAGCTGTGG ATTCACTTCA AGTCCAATGA AGGGAACAGC GCTAGAGGGT 2820  
 TCCAGTCCC ATACGTGACA TATGATGAGG ACTACCAGGA ACTCAITGAA GACATAGTTC 2880  
 GAGATGGCAG GCCTATGCA TCTGAGAAC ATCAGGAAAT ACTTAAGGAT AAGAACTTA 2940  
 20 TCAAGGCTCT GTTTGATGTC CTGGCCCATC CCCAGAACTA TTTCAAGTAC ACAGCCGAGG 3000  
 AGTCCCGAGA GATGTTTCCA AGATCGTTCA TCCGATTGCT ACGTTCCAAA GTGTCCAGGT 3060  
 TTTTGAGACC TTACAAATGA CTCAGCCAC GTGCCACTCA ATACAAATG TCTGCTATAG 3120  
 GGTGGTGGG ACAGAGCTGT CTTCCTCTG CATGTCAGCA CAGTCGGGTA TTGCTGCCTC 3180  
 CCGTATCAGT GACTCATTAG AGTTCAATTT TTATAGATA TACAGATAIT TTGTTAAATT 3240  
 25 GAACTTGGTT TTCTTTGCC AGCATCGTGG ATGTAGACTG AGAATGGCTT TGAGTGGCAT 3300  
 CAGCTTCTCA CTGCTGTGGG CGGATGTCTT GGATAGATCA CGGGCTGGCT GAGCTGGACT 3360  
 TTGTCAGCC TAGGTGAGAC TCACTGTGCT TTCTGGGGTC TTACTCTCC TCAAGGAGTC 3420  
 TGTAGTGAA AGGAGGCCAC AGAATAAGCT GCTTATTCTG AAATTCAGC TTCTCTAGC 3480  
 CCGGCCCTCT CTAAGGAGC CCGTGCAGT CCGTGCAGG CTCTGACCA GCGAACACAG 3540  
 30 CAAGAGGGCA GGGGAAGGAG CCCCTGCAGG CTCCTCCAC CCACTTGAG ACTGGGAGG 3600  
 ACTCAGTTT TCCACAGCCT TCTCCAGCCT GTGTGATACA AGTTTATCC CAGGAACCTG 3660  
 AGTTCTAAGC AGTGTCTGTG AAAAAAAGG CGAGAAAGAA TTAGAAATAA ATAAAACTA 3720  
 AGCACTCTG GAGACAT

35 SEQ ID NO:189 BCO2 Protein sequence  
 Protein Accession #: CAB92285

40 1 11 21 31 41 51  
 MGVAARNRPG AAWAVLLLL LLPLLLLAG AVPPGRGAA GPQEDVDECA QGLDDCHADA 60  
 LCQNTPTSYK CSCKPGYQGE GRQCEDIDEC GNELNGGCVH DCLNIPGNYR CTCFDGFMIA 120  
 HDGHNCILDVD ECLNENGGCQ HTCVNVMGSY ECCCKEGFFL SDNQHTCHIR SEBGLSCMNK 180  
 45 DRHCSHICKE AFRGSVACEC RPFELAKNQ RDCILTCNHG NGGQHSCHDD TADGPECSCH 240  
 PQYKMHIDGR SCLEREDTVL EVTESNTTSV VDGDKRVRKR LMETCAVNN GGCDRTCKDT 300  
 STGVHSCFPV GFTLQLDGKT CKDIDECQTR NGGCDHFCN IVGSFDCGCK KGFLLTDEK 360  
 SCQDVDECSL DRTCDHSCIN HPGTFACACN RGYTLYGFTH CGDTNECSIN NGGQQQVCVN 420  
 TVGSYECQCH FGYKLHWNNK DCVEVKGLLP TSVSFRVSLH CGKSGGGDGC FLRCHSGIHL 480  
 50 SSDVTIIRTS VIFKLNEGKC SLKNAELFE GLRPALEKH SSVKESFRYV NLTCSSGKQV 540  
 PGAFGRPSTP KEMFTVEFE LETNQKEVTA SCDLSCIVKR TEKRLRKAIR TLRKAVHREQ 600  
 FHQLSGMNL DVAKKPPTS ERQAESCQVG QGHAENQCVS CRAQTYDGA RERCILCPNG 660  
 TFQNEGGTGR CEPCPRPNS GALKTFEAWN MSECGLCQF GEYSADGFAP CQLCALGTRF 720  
 PEAGRTSCFP CGGLATKHQ GATSFQDCET RVQCSPGHFY NITTHRCIRC PVGTYPQPEF 780  
 55 KNNVCVCPGN ITTDFDGSIN ITQCKNRRCG GELGDFGTGY ESPNYPGNYR ANTECTWTIN 840  
 PPKRRLIV VPEIFLPIED DCGDYLVMRK TSSNSVTTY ETCQTYERPI AFTSRSKLW 900  
 IQFKSNEGNS ARGFQVPYVT YDEYQELIE DIVRDGRLYA SENHQELKD KKLKALFDV 960  
 LAHFQNYFKY TAQESREMFY RSFIRLLRSK VSRFLRPYK

60 SEQ ID NO:190 BFG1 DNA sequence  
 Nucleic Acid Accession #: AF007170  
 Coding sequence: 1-1725 (underlined sequences correspond to stop codon)

65 1 11 21 31 41 51  
 AAGGAGGCGG CCTCCGGGAA AAGCGACCGC AGGACTCTG AGAGCAGCT CCATGAGGCC 60  
 CTGGACCACT GCATGACCGC CCGGACCTC TTCTCACCAC ACCAGTTCTC AGAAGCACTC 120  
 AGCTACCTCA AGCCACAGAA CAGGAAAGC ATGTACCACT CACTGACATA TGCCACCATC 180  
 CTGGAGATGC AGGCCATGAT GACCTTTGAC CCTCAGGACA TCTGCTTGC CGGCAACATG 240  
 70 ATGAAGGAGG CACAGATGCT GTGTAGAGG CACCGGAGGA AGTCTTCTGT AACAGATTCC 300  
 TTACAGCAGC TGTGTAAACG CCCCACGCTG GGCCAAATCA CTGAAGAAGA AATCCACGCT 360  
 GAGGTCTGCT ATGCAGAGTG CCGTCTGCAG CGAGCAGCCC TGACCTTCTC GCAGGACGAG 420  
 AACATGTGTA GCTTCATCAA AGGCGGCATC AAAGTTCGAA ACAGCTACCA GACCTACAAG 480  
 GAGCTGGACA GCCTTGTTCG GTCTTCAAA TACTGCAAGG GTGAGAACCA CCGCAGCTTT 540  
 75 GAAGGAGGAG AGGAGCTTGG TGTAGGGGCC TTCAACCTGA CACTGTCCAT GCTTCTACT 600  
 AGGATCTGTA GGCTGTGGA GTTGTGGGG TTTTCAGGAA ACAAGGACTA TGGGCTGCTG 660  
 CAGCTGAGAG AGGGAGCGTC AGGACACAGC TTCCGCTCTG TGCTCTGTGT CATGCTCTG 720  
 CTGTGCTACC ACACCTTCTC CAGCTCTGCT CTCGGTACTG GGAACGTCAA CATCGAGGAG 780  
 GCGAGGAGC TCTTGAAGCC CTACCTGAAC CGGTACCTTA AGGGTGCCAT CTCTCTGTC 840  
 TTTGCAGGGA GGATTGAAGT CATTAAAGGC AACATTGATG CAGCCATCCG GCCTTTCGAG 900

5 GAGTGCTGTG AGGCCACGA GCACTGGAAG CAGTTTCACC ACATGTGCTA CTGGGAGCTG 960  
 ATGTGGTGCT TCACCTACAA GGGCCAGTGG AAGATGTCT ACTTCTACGC CGACCTGCTC 1020  
 AGCAAGGAGA ACTGCTGGTC CAAGGCCACC TACATTTACA TGAAGGCCGC CTACCTCAGC 1080  
 ATGTTTGGGA AGGAGGACCA CAAGCCGTTT GGGGACGACG AAGTGGAAAT ATTTCGAGCT 1140  
 GTGCCAGGOC TGAAGCTCAA GATTGCTGGG AAATCTCTAC CCACAGAGAA GTTGCCATC 1200  
 CGGAAGTCCC GGCCTACTT CTCTCCAAC CCTATCTCGC TGCCAGTGCC TGCTCTGGAA 1260  
 ATGATGTACA TCTGGAACGG CTACGCCGTG ATTGGGAAGC AGCCGAAACT CACGGATGGG 1320  
 ATACTTGAGA TTATCACTAA GGCTGAAGAG ATGCTGGAGA AAGGCCGAGA GAACGAGTAC 1380  
 TCAGTGGATG ACGAGTGCTT GGTGAAATG TTGAAAGGCC TGTGTCTGAA ATACCTGGGC 1440  
 10 CGTGTCCAGG AGGCCGAGGA GAATTTTAGG AGCATCTCTG CCAATGAAAA GAAGATTAAA 1500  
 TATGACCACT ACTTGATCCC AAACGCCCTG CTGGAGCTGG CCTGCTGCTT TATGGAGCAA 1560  
 GACAGAAACG AAGAGGCCAT CAAACTTTTG GAATCTGCCA AGCAAACTA CAAGAATTAC 1620  
 TCCATGGAGT CAAGGACACA CTTTCGAATC CAGGCAGCCA CACTCCAAGC CAAGTCTTCC 1680  
 CTAGAGAACG ACAGCAGATC CATGGTCTCA TCAGTGTCT TGTAGCTTTG TGCAGCAGTT 1740  
 15 CCGGCTGGA AGACAGAGAC AGCTGGACAG AGCTCTGTA AACATTTCAA AATACCCCT 1800  
 CCCCCTGCC TGCCCTGCTT TTGGGTCCA CCGGCACCTC AGTTGGATGG CACAACATAG 1860  
 TGTATCGTG CAGAGCCGA GCTGGCATT TCACCACTGT AGCCAAGGCC CTTTGCCAA 1920  
 GGCAGAGCAG GTGAGCCCT CTGCTGCC TATCACACAT ACGGGTACTT GCTTTTCACT 1980  
 GTGATGTTA AGAGAAATGA TGAACAGTTT ACATTTTCT TAGAAATACA TTGATGGGAT 2040  
 20 CACAGTTGGC TTAAAAAAC AACAAACAT AACCACTGT AAGTCTTGT CTTCACTAT 2100  
 TATCATCTGG AGGTAATCT CTTTATATGA TGATGCCAA GGGCAAAATG CTTTCAAA 2160  
 TCAGCAAGT CTACGCTGT GTGACGGAAG GTCCTCAGA GGACCTGAGG AATGCTGGG 2220  
 AGAGGCTAAG CCTCAGCCTT CAATGCTTCT GGGGTGGGC ATGAGGATGT ACACAGACAC 2280  
 CCACACTCCT ACTACTCACA CTTTCTTCT CTCTTTTGT AAATTTCCAA TTTAAAAATC 2340  
 25 AAGCAAGTCT TTTTGTGAG ATAAAACTG AGCTCTCTG TAGAAAAATC AATCTCTACC 2400  
 AGTAGAAAT GCCAGGGCTT GATGGAAGAG CTGTGTAGCC CTTCTATGC CAAAGCCAGG 2460  
 AAATTTGGGG GGCAGGAGGA GGTCTCAGA ATCCAGTCTG TATCTTGTCT GTATGCCAAA 2520  
 CTGAAACAC TGGGAATAAT TTATGAAACA TAAAAATCT CTGTACTICA CTCGAAGGTA 2580  
 30 CAITTGCTTA CTGACAGCAT TTTTGTAAA ACTGTTATTC TTGAAAAAAA AAAAAAAAAA 2640  
 AA

**SEQ ID NO:191 BFG1 Protein sequence**

Protein Accession #: AAC39582

35 1 11 21 31 41 51  
 MTALDLFLIN QFSEALSYLK PRKESMYHS LTYATILEMQ AMMTFDPQDI LLAGNMMKEA 60  
 40 QMLQQRHRRK SSVTDSFSSL VNRPTLGQFT EEEHAEVCY AECLLQRAAL TFLQDENMVS 120  
 FIKGGIKVRN SYQTYKELDS LVQSSQYCKG ENHPHFEGGV KLGVGAFNLT LSMPLTRILR 180  
 LLEFVGFSGN KDYGLQLQEE GASGHSFRSV LCVMLLLCYH TFLTFVLGT NVNIEEAEKL 240  
 LKPYLNRYPK GAIFLFFAGR IEVKGNDIA AIRFEBCCE AQHWKQFHH MCYWELMWCF 300  
 TYKQGWKMSY FYADLLSKEN CWSKATYIYM KAAVLSMFGK EDHKPFGDDE VELFRAVPL 360  
 45 KLKIAKSLP TEKFAIRKSR RYFSSNPISL PVPALMMYI WNGYAVIGKQ PKLTDGILEI 420  
 ITKAEEMLEK GPENEYSVDD ECLVLKLLGL CLKYLRVQE AEENFRSISA NEKKIKYDHY 480  
 LIPNALLLEA LLLMEQDRNE EAIKLLSAK QNYKNYSMES RTHFRQAAT LQAKSSLENS 540  
 SRSMVSSVSL

**SEQ ID NO:192 BFG6 DNA sequence**

Nucleic Acid Accession #: NM\_032583

Coding sequence: 1-4044 (underlined sequences correspond to start and stop codons)

55 1 11 21 31 41 51  
 ATGACTAGGA AGAGGACATA CTGGGTGCC AACTCTCTG GTGGCTCGT GAATCGTGGC 60  
 ATCGACATAG GCGATGACAT GGTTCAGGA CTTATTATA AAACCTATAC TCTCCAAGAT 120  
 GGCCTCTGGA GTCAGCAAGA GAGAAATCT GAGGCTCCAG GGAGGGCAGC TGTCCACCG 180  
 TGGGGGAAAT ATGATGCTGC CTTGAGAACC ATGATTCCT TCCGTCCAA GCCGAGGTTT 240  
 60 CCTGCCCTCC AGCCCTGGA CAATGCTGGC CTGTCTCTCT ACCTCACCGT GTCATGGCTC 300  
 ACCCGCTCA TGATCCAAAG CTTACGGAGT CGCTTAGATG AGAACACCAT CCTCCACTG 360  
 TCAGTCCATG ATGCCTCAGA CAAAAATGTC CAAAGGCTTC ACCGCTTTG GGAAGAAGAA 420  
 GTCTCAAGGC GAGGGATTGA AAAAGCTTCA GTGCTTCTG TGATGCTGAG GTTCCAGAGA 480  
 ACAAGGTGA TTTTCGATG ACTCTGGC ATCTGCTCT GCATGCGAG TGTAATCGG 540  
 65 CCAATATGTA TTATACCAA GATCCTGAAA TATTCAGAA AGCAGTTGGG GAATGTTGTC 600  
 CATGGAGTGG GACTCTGCTT TGCCCTTTT CTCTCCGAAT GTGTGAAGTC TCTGAGTTTC 660  
 TCTCCAGTGT GGATCATCA CCAACGCACA GCCATCAGGT TCGAGCAGC GTTCTTCTCC 720  
 TTTGCCCTTG AGAAGCTCAT CCAATTTAAG TCTGTAATAC ACATCACTCT AGGAGAGGCC 780  
 70 ATCAGCTTCT TCACCGGTGA GTTAACTAC CTGTTTGAAG GGGTGTGCTA TGGACCCCTA 840  
 GTACTGATCA CCGCGCATC GCTGGTCATC TGCAGCATTT CTCTCTACTT CATTATTGGA 900  
 TACACTGCAT TTATGCCAT CTTATGCTAT CTCTGGTIT TCCCACTGCC GGTATTCATG 960  
 ACAAGAAATG GTGTGAAGGC TCAGCATCAC ACATCTGAGG TCAGCGACCA CGGCATCCGT 1020  
 GTGACCAATG AAGTCTCTAC TTGCAATTAAG CTGATTAATA TGTACACATG GGAGAAACCA 1080  
 TTTGCAAAAA TCATTGAAGG TATGGAAGT CTGACTTCT GCTCCAACC TGGTGTGCTG 1140  
 75 ATGGCCTTCA GCATGCTGGC CTCCTTGAAT CTCTTCGCG TGTCACTGTT CTTTGTGCTT 1200  
 ATTGCAGTCA AAGTCTCTAC GAATTCCTAG TCTGAGTGA TGAGGTTCAA GAAGTTTTC 1260  
 CTCAGAGAGA GCCCTGTTT CTATGTCCAG ACATTACAAG ACCCCAGCAA AGCTCTGGTC 1320  
 TTTGAGGAGG CCACCTGTGC ATGGCAACAG ACCTGTCCG GGATCGTCAA TGGGGCACTG 1380  
 GAGCTGGAGA GGAACGGGCA TGCTTCTGAG GGGATGACCA GGCTAGAGA TGCCCTCGGG 1440

CCAGAGGAAG AAGGGAACAG CCTGGGCCA GAGTTGCACA AGATCAACCT GGTGGTGTCC 1500  
 AAGGGGATGA TGTTAGGGGT CTGGGCAAC ACGGGGAGTG GTAAGAGCAG CCTGTGTGCA 1560  
 GCCATCTCG AGGAGATGCA CTGTCTGAG GGCTCGGTGG GGGTGCAGGG AAGCCTGGCC 1620  
 5 TATGTCCCCC AGCAGGCCGT GATCGTCAGC GGAACATCA GGGAGAACAT CCTCATGGGA 1680  
 GGCGCATATG ACAAGGCCG ATACCTCCAG GTGCTCCACT GCTGCTCCCT GAATCGGGAC 1740  
 CTGGAACTTC TGCCCTTTGG AGACATGACA GAGATTGGAG AGCGGGGCT CAACCTCTCT 1800  
 GGGGGGACAG AACAGAGGAT CAGCCTGGCC CGCGCCGTCT ATTCCGACCG TCAGATCTAC 1860  
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SEQ ID NO:193 BFO6 Protein sequence

Protein Accession #: NP\_115972.1

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SEQ ID NO:195 BHR8 Protein sequence

Protein Accession #: none found

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SEQ ID NO:196 COA5 DNA SEQUENCE

20 Nucleic Acid Accession #: AA088458  
Coding sequence: 862-1995 (underlined sequences correspond to start and stop codons)

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	AAAGAAATAG	GTCTTCCAG	TTTACAGCTT	GAAATCAGGC	TAGTGAGTGG	CCCTGGAGAC	2460
	CACAGGGGGA	GAAATTAAG	GCCCCGGCTG	GCAGGGTCTA	GGTGGCTGGC	AGAGGCACAT	2520
	GCAGACCTGT	CCTGGAGCCT	GCCTTAGGAC	GCTGGGCGGG	TCAGTCTCCG	TGCAGGATGT	2580
	GAGCAGCGTC	CCTGGGCTCT	ATCCGCGAGG	TGCCAGTAGC	GTGTGCAGGT	ACATACACGT	2640
70	GCCTGCACAT	TGTGATGACA	CCCGAAATG	TCTCAGGATG	TGTAAATGTG	TCTTTGGGGG	2700
	CAGAAAGTGT	CCCAAGTTAG	AATCTGCCCC	AGAGGAACAC	ATCCACAACA	GGCCTCAGAG	2760
	TTTGTGTGTG	ATCAAGTTCC	AAGGAAAAGG	AACATCTCAG	CCGGGCGTGG	TGGTTACAGC	2820
	CTGGAATCCC	AGCACTTGAG	GCCAGGAGTT	CCAGAGCAGC	CTGGGCAACG	CAGTGAGAGA	2880
	CCCATCTCT	ACAARAATAA	AAAAAGAAAG	AAAGAAATG	AGAGATCCAG	GTTTAAAAAT	2940
75	TCATAAACAC	CACAAGGAAA	CAATACACTA	TGAGACCCAG	CAGAAGCAAC	AGATTGACTC	3000
	TAGACCCAGA	TACTAGAAAT	ATCAGAGAGA	ATATAAGATA	ACAGTGTTTT	ATATATCTAA	3060
	AGAAATAAAA	GAGATTTCTG	GAAACATGAA	AAAAAA			

## SEQ ID NO:197 LBG2 DNA SEQUENCE

Nucleic Acid Accession #:  
Coding sequence:X63629  
54-2543 (start and stop codons are underlined)

5 1 11 21 31 41 51  
 GCGGAACACC GGCCCGCCGT GCGGCAGCT GCTTCACCCC TCTCTCTGCA GCCATGGGGC 60  
 TCCCTGCTGG ACCTCTCTGG TCTCTCTCC TTCTCCAGGT TTGCTGGCTG CAGTGGCGGG 120  
 CCTCCGAGCC GTGCGGGGGG GTCTTCAGGG AGGCTGAAGT GACCTTGGAG GCGGGAGGCG 180  
 CGGAGCAGGA GCCCGGCCAG GCGCTGGGGA AAGTATTTCAT GGGCTGCCCT GGGCAAGAGC 240  
 CAGCTCTGTT TAGCACTGAT AATGATGACT TCACTGTGGG GAATGGCGAG ACAGTCCAGG 300  
 AAAGAAGGCT TAGGAAGGAA AGGAATCCAT TGAAGATCTT CCCATCCAAA CGTATCTTAC 360  
 GAAGACACAA GAGAGATTGG GTGGTTGCTC CAATATCTGT CCTGAAAAAT GGCAAGGGTC 420  
 CCTTCCCCCA GAGACTGAAT CAGCTCAAGT CTAATAAAGA TAGAGACACC AAGATTTTCT 480  
 ACAGCATCAC GGGGCCGGGG GCAGACAGCC CCCCTGAGGG TGTCTTGGT GTAGAGAAAG 540  
 AGACAGGCTG TGTGTTGTTG AATAAGCCAC TGGACCGGGA GGAGATTGCC AAGTATGAGC 600  
 TCTTTGGCCA CGCTGTGTCA GAGAATGGTG CCTCAGTGA GGACCCCATG AACATCTCCA 660  
 TCATCGTGAC CGACCAAGT GACCACAAGC CCAAGTTTAC CCAGGACACC TTCGAGGGA 720  
 GTGTCTTAGA GGGAGTCTTA CCAGGTACTT CTGTGATGCA GGTGACAGCC ACAGATGAGG 780  
 ATGATGAGTG AATGGGGTGG TTGCTTACTC CATCCATAGC CAAGAACCAA 840  
 AGGACCCACA CGAAGCTATG TTCAACAATC ACCGGAGCAC AGGCCACCATC AGCGTCACTC 900  
 CCACTGGGCT GGACGGGATC AAAGTCCCTG AGTACACACT GACCATCCAG GCCACAGACA 960  
 TGGATGGGGA CGGCTCCACC ACCACGGCAG TGGCAGTAGT GGAGATCCTT GATGCCAATG 1020  
 ACAATGCTCC CATGTTTGAC CCGCAGAAAT ACAGAGGCCA TGTGCTGAG AATGCAATGG 1080  
 GCGATAGGTG GCAGAGGCTG ACGGTCACTG ATCTGGACGC CCCCAACTCA CCAGCGTGGC 1140  
 GTGCCACCTA CCTTATCATG GCGGTGACG ACCGGGACCA TTTTACCATC ACCACCCACC 1200  
 CTGAGAGCAA CCAGGGGATC CTGACAACCA GGAAGGGTTT GGATTTTGGAG GCCAAAAACC 1260  
 AGCACACCCCT GTACGTTGAA GTGACCAACG AGGCCCTTTT TGTCTGAAAG CTCCCAACCT 1320  
 CCACAGCCAC CATAGTGGTC CAGGTGGAGG ATGTGAATGA GGCACCTGTG TTTGTCCAC 1380  
 CCTCCAAAGT CGTTGAGGTC CAGGAGGGCA TCCCACTGG GGAGCCTGTG TGTGTCTACA 1440  
 CTGCAAGAAG CCGTGACAAG GAGAATCAAA AGATCAGCTA CCGCATCCTG AGAGACCCAG 1500  
 CAGGGTGGCT AGCCATGGAC CCAGACAGTG GGCAGGTAC AGCTGTGGGC ACCCTCGACC 1560  
 GTGAGGATGA CGAGTTTGTG AGGAACAACA TCTATGAAGT CATGTCCTTG GCCATGGACA 1620  
 ATGGAAGCCC TCCACCACT GGCACGGGAA CCTTCTGCT AACACTGATT GATGTCAACG 1680  
 ACCATGGGCC AGTCCCTGAG CCGCGTCAGA TCACCATCTG CAACCAAAGC CCGTGTGGCC 1740  
 ACGTGTGAA CATCAGGAC AAGGACCTGT CTCGCCACAC CTCCTCTTC CAGGCCACG 1800  
 TCACAGATGA CTCAGACATC TACTGGACGG CAGAGGTCAA CGAGGAAGGT GACACAGTGG 1860  
 TCTTGTCCCT GAAGAAGTTC CTGAAGCAGG ATACATATGA CGTGCACCTT TCTCTGCTG 1920  
 ACCATGGCAA CAAAGAGCAG CTGACGGTGA TCAGGGCCAC TGTGTGGAC TGCCATGGCC 1980  
 ATGTGAAAC CTGCCCTGGA CCGTGAAAG GAGGTTTCAT CTOCCTGTG CTGGGGGCTG 2040  
 TCTGTGCTCT GCTGTTCCTC CTGCTGTGTC TGCTTTTGT GGTGAGAAAG AAGCGGAAGA 2100  
 TCAAGAGAGC CTCTCACTC CCAGAAGATG ACACCCGTGA CAACGTCCT TACTATGGCG 2160  
 AAGAGGGGGG TGGCGAAGAG GACCAGGACT ATGACATCAC CCAGTCCAC CGAGGTCTGG 2220  
 AGGCCAGGCC GGAGGTGCTT CTCGCAATG ACGTGGCAC AACCATCATC CCGACAACCA 2280  
 TGTACCGTCC TAGGCCAGCC AACCCAGATG AAATCGGCAA CTTTATAATT GAGAACCTGA 2340  
 AGGCGGCTAA CACAGACCCC ACAGCCCGC CTAAGACAC CCTCTGGTG TTGACTATG 2400  
 AGGGCAGCGG CTCGAGCGCC GCGTCCCTGA GCTCCCTCAC CTCTCCGCC TCGGACCAAG 2460  
 ACCAAGATTA CGATTATCTG AACGAGTGGG GCAGCGGCTT CAAGAAGCTG GCAGACATGT 2520  
 ACGGTGGCGG GGAGGACGAC TAGGCGGCTT GCTGCAAGG CTGGGGAACA AACGTCAGGC 2580  
 CACAGAGCAT CTCGAAGGGG TCTCAGTTC CCTTTCAGCT GAGGACTTCG GAGCTGTCA 2640  
 GGAAGTGGCC GTAGCAACTT GCGGAGAGCA GGCTATGAGT CTGACGTTAG AGTGGTTGCT 2700  
 TCCTTAGGCT TTCAGGATGG AGGAATGTGG GCAGTTTGGC TTCAGCACTG AAAACCTCTC 2760  
 CACTGGGGCC AGGTTGCTCT CAGAGGCGAA GTTTCAGAA GCCTCTTACC TGCGTAAAA 2820  
 TGCTCAACCC TGTGTCTGG GCTGGGCTT GCTGTGACTG ACCTACAGTG GACTTCTCT 2880  
 CTGGAATGGA ACCTTCTTAG GCTCTGCTG GCAACTTAAT TTTTITTTT AATGCTATCT 2940  
 TCAAAACGTT AGAGAAAGTT CTCAAAAGT GCAGCCACGA GCTGCTGGGC CCACCTGGCC 3000  
 TCTGCAATTT CTGGTTTCCA GACCCCAATG CCTCCATTG GGATGGATCT CTGCGTTTT 3060  
 ATACTGAGTG TGCTAGGTT GCGCCTTATT TTTTATTTT CCTGTGCGT TGCTATAGAT 3120  
 GAAGGGTGAG GACAATCGTG TATATGTACT AGAAGCTTTT TATTAAGAA A

## SEQ ID NO:198 LBG2 Protein sequence:

Protein Accession #: CAA45177

65 1 11 21 31 41 51  
 MGLPRGLAS LLLQVCWLQ CAASEPCRAV FREAEVTLEA GGAEQEPQQA LGKVFMGCPG 60  
 QEPALFSTDN DDFTVRNGET VQERRSLKER NPLKIFPSKR ILRRHKRDWV VAPISVFENG 120  
 KGFPFQRLNQ LKSNKDRDTK IFYSITGPGA DSFPFEGVAV EKETGWLLN KPLDREEIAK 180  
 YELFGHAVSE NGASVEDPMN ISIVTDQND HKPKFTQDTF RGSVLEGVLP GTSVMQVTAT 240  
 DEDDAIYTYN GVVAYSIHSQ EPKDPHDLMF TIHRSTGTIS VISSGLDREK VPEYTLTIQA 300  
 TMDMDGSGST TAVAVVELD ANDNAPMFDQ QKYEAHVPE AVGHEVQRLT VIDLDAFNSP 360  
 AWRATYLMG GDDGDHFTT THPESNQIL TIRKGLDFEA KNQHTLYVEV TNEAPFVLKL 420  
 PSTATVTVH VEDVNEAPVF VPPSKVVBVG EGIPTGPEVC VYTAEDPDKE NQKISYRILR 480  
 DPAGVLAMD PDSGQVTA VT LDREDEQFVR NNIEYVMVLA MDNGSPPTTG TGTLLTLID 540  
 VNDHGVPFEP RQITCNQSP VRHVLNITDK DLSPTSPFQ AQLTDDSDIY WTAEVNEEGD 600  
 TVVLSLKKFL KQDTYDVHLS LSDHGNKEQL TVIRATVDCD HGHVETCPG WKGGFILPVL 660  
 GAVLAILFLL LVLLLVK RKIKEPLLP EDDTRDNVVF YGEEGGGEED QDYDTQLHR 720

GLEARPEVVL RNDVAPTIIE TPMYRPRPAN PDEIGNFIE NLKAANTDPT APPYDILLVF 780  
DYEGSGSDAA SLSSLTSSAS DQDQDYDYLN EWGSRFKKLA DMYGGGEDD

## SEQ ID NO:199 OB15 DNA SEQUENCE

5 Nucleic Acid Accession #: NM\_012152  
Coding sequence: 43-1104 (underlined sequences correspond to start and stop codons)

10 1 11 21 31 41 51  
CTTCTTTAAA TTTCTTTCTA GGATGTTTAC TTCTTCTCCA CAATGAATGA GTGTCACTAT 60  
GACAAGCACA TGGACTTTT TTTATAATAGG AGCAACACTG ATACTGTCGA TGACTGGACA 120  
GGAACAAAGC TTGTGATTGT TTGTGTGTTT GGGACGTTTT TCTGCCGTGT TATTTTTTTT 180  
TCTAATCTCT TGCTCATGCG GGCAGTGATC AAAACAGAA AATTTCATTT CCCCCTCTAC 240  
TACCTGTGG CTAATTAGC TGCTGCCGAT TTCTTCGCTG GAATTGCCTA TGTATTCTCTG 300  
15 ATGTTTAAAC CAGGCCCACT TTCAAAACT TTGACTGTCA ACCGCTGGTT TCTCCGTCAG 360  
GGGCTTCTCG ACAGTAGCTT GACTGCTTCC CTCACCAACT TGCTGGTAT CGCGGTGGAG 420  
AGGCACATGT CAATCATGAG GATGCGGCTC CATAGCAACC TGACCAAAA GAGGGTGACA 480  
CTGCTCATTT TGCTGTCTG GGCATCGGCC ATTTTATGCG GGGCGGTCCC CACACTGGGC 540  
20 TGGAAATGCG TCTGCAACAT CTCTGCCTGC TCTTCCCTGG CCCCATTTA CAGCAGGAGT 600  
TACCTGTGTT TCTGGACAGT GTCCAACCTC ATGGCCCTCC TCATCATGCT TGTGGTGATC 660  
CTGCGGATCT ACGGTGACGT CAAGAGGAAA ACCAACGCTC TGTCTCCGCA TACAAGTGGG 720  
TCCATCAGCG GCCGGAGGAC ACCCATGAAG CTAATGAAGA CGGTGATGAC TGTCTTAGGG 780  
GCGTTTGTGG TATGCTGGAC CCCGGGCTG GTGGTCTGCG TCCTCGACGG CCTGAAGTGC 840  
25 AGGCAGTGTG GCTGTGACGA TGTGAAAGG TGTGCTCTGC TGCTGGCGCT GCTCAACTCC 900  
GTCTGAACCC CCAATCATCTA CTCTACACAG GACGAGGACA TGTATGGCAC CATGAAGAAG 960  
ATGATCTGCT GCTTCTCTCA GGAGAACCCA GAGAGGCGTC CCTCTCGCAT CCGCTCCACA 1020  
GTCTCAGACA GGAGTACAC AGGCAGCCAG TACATAGAGG ATAGTATTAG CCAAGGTGCA 1080  
30 GTCTGCAATA AAAGCACTTC CTAAACTCTG GATGCCCTCT GGCACACCA GGTGATGACT 1140  
GTCTTAGG

## SEQ ID NO:200 OB15 Protein sequence:

Protein Accession #: NP\_036284

35 1 11 21 31 41 51  
MNECHYDKEM DFFYNRSMTD TVDDWTGTKL VIVLCVGTFF CLFIPFSNSL VIAAVIKNRK 60  
40 PFFPPFYLLA NLAAADFFAG LAYVFLMFT GPVSKLTIVN RWFRLQGLLD SSLTASLTNL 120  
LVIAVERHMS IMRMVHSNL TKRVTLLIL LVMAIAIPMG AVPTLGMNCL CNISACSSLA 180  
PIYSRSVLYF WTVSNLMAPL IMVVVYLRIT VYVKRKTIVL SPHTSGSISR RRTPMKLMKT 240  
VHTVLGAFVW CWTPLGVVLL LDGLNCRQCG VQHVKRWFLL LALLNSVVPN IITYSKDEDM 300  
YGTMKMKMIC FSQENPERRP SRIPSTVLRS SDTGSQYIED SISQGAVCNK STS

## SEQ ID NO:201 PAA6 DNA SEQUENCE

45 Nucleic Acid Accession #: AA569531  
Coding sequence: 1-504 (underlined sequences correspond to start and stop codons)

50 1 11 21 31 41 51  
ATGACCTACA GTTACTCATT TTTCAGGCCT GAGTTGATCG TTAATCATCT TAATTATGTT 60  
CATTCCTAAG CCAACAGGAG AACCAAGACC AAAACTTTAT TGTCCTGCT TTCAATTTCTT 120  
GATGAAACCT CTGGACATAG CACACATCTT CCTGTGTTAT CTCTCTCAAA GGAGTGTGGA 180  
55 GTGCTTCATC TGGACATCCA CGGGAAGAAG GAAGACATGA GAATCACCCA ACAGTCTTCC 240  
CAGCTATACC TGTGGGACAT GGGTGGTTTT ACAATATTTA AGAACCCTGT GATGAGCCTC 300  
ATACCCAGAG GGAACAAACG CTCCCCAAA AGAGTTACAG AAACCATCCT GAGAGATTTT 360  
AAGCAGAAGC AAAGTTCAAA GATCCAAGAG GAGAGACGAA GAGAATCTGC AGGACCAAAC 420  
CTCTCTCAT TCTGTTTGTG GGGGAATGCT GGAAGAGGAG ACAGGCCCA GATTTGGGCA 480  
60 GGAAGTAAAC AGTTTTACGG CTGAGGCCAA TCTGAGCAGG AACATTCCAA TATTTCTTCA 540  
GCTACGTTGT CCCAGCACTT CACTGGTTAA CCTTTTATGT CCACCATTTG TGGATTTCAC 600  
AGCTACTTGT CAATGGTGAA TATGATCAT CATCATATC TACTGAGCTG CTACCATATC 660  
CCAGCTACTC CTTCATATGT GTTCATTATT TTCTCAACAC TCAGCATATT TGCAATATGT 720  
TATGTAATAT CACAGACAAG GAAACTGAAC GCAGAAATGT TTTATTTCCT GCCAAACATC 780  
65 ACATGAGGAT GAACAATGAA ACGATTTGA AACCAGGATT GTCTGATTCC AACATCTCTG 840  
GTCCTTTTTT CACTCTGATA TGCTGCAATT AAAAAGCCAT TTCTAAGACT GT

## SEQ ID NO:202 PAA6 Protein sequence:

Protein Accession #: none found

70 1 11 21 31 41 51  
MTYSYSFFRP ELIVNHLNYY HSEANRRRTK KTLNLSLSPL DBTSGLSTHL PCLSLSKECG 60  
75 VLHLDIHGKK EDHRTTQSS QLYLWDMGGF TIFKNLWMSL IPRGNKRSFK RVTETILRDF 120  
KQKQSSKIQE ERRRESAGPN LSSPWFVGN AGRGDRPQWA GSKQFSG



		SEQ ID NO:203 PAB2 DNA SEQUENCE					
Nucleic Acid Accession #:		XM_050197					
Coding sequence:		310-1971 (underlined sequences correspond to start and stop codons)					
5	1	11	21	31	41	51	
	TCACACGTGC	CAAGGGGCTG	GCTCAGCGGA	ACCAGCCTGC	ACGGGCTGGC	TCCGGGTGAC	60
	AGCGCGCGCG	CTCGGCGCAG	ATCTGAGTGA	TGAGACGTGT	CCCCACTGAG	GTGCCCCACA	120
10	GCAGCAGGTG	TTGAGCATGG	GCTGAGAAGC	TGACCCGCA	CCAAAGGGCT	GGCAGAAATG	180
	GGCGCTGGC	TGATTCTTAG	GCAGTTGGCG	GCAGCARGGA	GGAGAGGCCG	CAGCTTCTGG	240
	AGCAGAGCCG	AGACGAAGCA	GTCTGTGAGT	GCCTGAACGG	CCCCCTGAGC	CCTACCCGCC	300
	TGCCCCACTA	TGGTCCAGAG	GCTGTGGGTG	AGCCGCTGCG	TGCGGCACCG	GAAGAGCCAG	360
	CTCTTGCTGG	TCAACCTGCT	AACTTTGGC	CTGAGGTGT	GTTTGGCCCG	AGGCATCACC	420
	TATGTGCCCG	CTCTGCTGCT	GGAAAGTGGG	GTAGAGGAGA	AGTTTATGAC	CATGGTGTCTG	480
15	GGCATTTGTC	CAGTGTGGG	CCTGGTCTGT	GTCCCGCTCC	TAGGCTCAGC	CAGTGACCAC	540
	TGGGCTGGAC	GCTATGGCCG	CCGCGGGCCC	TTCATCTGGG	CACTGTCTTT	GGGCATCCTG	600
	CTGAGCCTCT	TTCTCATCCC	AAGGGCCGGC	TGGCTAGCAG	GCGCTCTGTG	CCCGGATCCC	660
	AGGCCCCTGG	AGCTGGCAGT	GCTCATCTTG	GGCTGGGGCG	TGCTGGACTT	CTGTGGCCAG	720
	GTGTGCTTCA	CTCCACTGGA	GGCCCTGCTC	TCTGACCTCT	TCCGGGACCC	GGACCACTGT	780
20	CGCCAGGCCT	ACTCTGTCTA	TGCTTTCATG	ATCAGTCTTG	GGGCTGTGCT	GGGCTACTTC	840
	CTGCTTGCCA	TTGACTGGGA	CACCACTGCC	CTGGCCCCCT	ACCTGGGCAC	CCAGGAGGAG	900
	TGCTCTTTTG	GCTTGTCTAC	CCTCATCTTC	CTCAGCTGCG	TAGCAGCCAC	ACTGCTGGTG	960
	GCTGAGGAGG	CAGCGCTGGG	CCCAACCGAG	CCAGCAGAAG	GGCTGTGCGC	CCCTCTCTTG	1020
25	TGCGCCCTTG	CTGTCTCATG	CCGGGCGCGC	TTGGCTTTCC	GGAACTGGG	CGCCCTGCTT	1080
	CCCGGCTGCG	ACCAAGCTGTG	CTGCGCATG	CCCGCACCC	TGCGCCGGCT	CTTCTGTGCT	1140
	GAGCTGTGCA	GCTGGATGGC	ACTCATGACC	TTCAGCTGT	TTTACACGGA	TTTCTGTGGC	1200
	GAGGGCTGT	ACCAGGCGCT	CGCCAGAGCT	GAGCGGGCCA	CCGAGGCCCG	GAGACACTAT	1260
	GATGAAGCGG	TTGCGATGGG	CAGCCTGGGG	CTGTTCCTGC	AGTGGGCCAT	CTCCCTGGTC	1320
30	TTCTCTCTGG	TGATGGACCG	GCTGGTGCAG	CGATTGGCCA	CTCGAGCAGT	CTATTGGGCC	1380
	AGTGTGGCAG	CTTCCCTGT	GGCTGCCGCT	GCCACATGCC	TGTCACACAG	TGTGGCGGTG	1440
	GTGACAGCTT	CAGCCGCCCT	CACCGGGTTC	ACCTTCTCAG	CCCTGCAGAT	CCTGCCCTAC	1500
	ACACTGGCCT	CCCTCTACCA	CCGGGAGAG	CAGGTGTTC	TGCCCAATA	CCGAGGGGAC	1560
	ACTGAGGTG	CTAGCAGTGA	GGACAGCCTG	ATGACCAGCT	TCCTGCCAGG	CCCTAAGCCT	1620
35	GGAGCTCCCT	TCCCTAATGG	ACACGTGGGT	GCTGGAGCCA	GTGGCTGTCT	CCCACTTCCA	1680
	CCCGGCTCT	CGGGGGCCTC	TGCTGTGAT	GTCTCCGTAC	GTGTGTGTGT	GGGTGAGCCC	1740
	ACCGAGGCCA	GGGTGGTTCC	GGGCGGGGCG	ATCTGCTTGG	ACCTGCCCAT	CTGTGATAGT	1800
	GCTTCTCTGC	TGTCACAGGT	GGCCCATGCC	CTGTCTATGG	GCTCCATGCT	CCAGCTCAGC	1860
	CAGTCTGTCA	CTGCCTATAT	GGTGTCTGCC	GCAGGCTTGG	GTCTGTGTGC	CATTTACTTT	1920
40	GCTACACAGG	TAGTATTTGA	CAAGAGCGAC	TTGGCCAAAT	ACTCAGCGTA	GAAGACTTCC	1980
	AGCACATTGG	GGTGGAGGGC	CTGCTCACT	GGTCCCAGC	TCCCGCTCC	TGTTAGCCCC	2040
	ATGGGCTTGC	CGGGGCGGCC	GCCAGTTTCT	GTGTCTGCCA	AAGTAATGTG	GCTCTCTGCT	2100
	GCCACCTCTG	GCTGCTAGAG	TGCTAGCTG	CACAGCTGGG	GGCTGGGGCG	TCCTCTCTCT	2160
	CTCTCCCGAG	CTCTTAGGGC	TGCTGACTG	GAGGCTTCC	AAGGGGTTT	CAGTCTGGAG	2220
45	TTATACAGGG	AGGCCAGAG	GGCTCCATGC	ACTGGAATGC	GGGACTCTG	CAGGTGGATT	2280
	ACCCAGGCTC	AGGGTTAACA	GCTAGCCTCC	TAGTTGAGAC	ACACCTAGAG	AAGGGTTTCT	2340
	GGGAGCTGAA	TAAACTCAGT	CACCTGGTTT	CCCATCTCTA	AGCCCTCTAA	CCTGCAGCTT	2400
	CGTTTAATGT	AGCTCTTGA	TGGGAGTTTC	TAGGATGAAA	CACTCTCTCA	TGGGATTTGA	2460
50	ACATATGAAA	GTATTTTGT	GGGGAAGAGT	CCTGAGGGCG	AACACACAAG	AACAGGTCC	2520
	CCTCAGCCCC	ACAGGCACTG	GTCTTTTCTG	CTNGANTCCA	CCCCCCCCCT	CTTTTACCTT	2580
	TT						

## SEQ ID NO:204 PAB2 Protein sequence:

Protein Accession #:		XP_050197					
55	1	11	21	31	41	51	
	MYORLWVSRL	LRHRKAQLLL	VNLLTFGLEV	CLAAGITVVP	PLLEVGVEE	KFTMVLGIG	60
60	PVLGLVCPVL	LGSASDHWRG	RYGRRRPFIW	ALSLGILLSL	FLIPRAGWLA	GLLCPDFRFL	120
	ELALLILGVG	LLDFCQVCF	TPLEALLSDL	FRDPDHCRQA	YSVYAFMISL	GGCLGYLLPA	180
	IDWDTALAP	YLGTEECLEF	GLLTLIFLTC	VAATLLVAEE	AALGPTEPAE	GLSAPSLSPH	240
	CCPCRARLAF	RNLGALLPRL	HQLCCRMFRT	LRLLPVAELC	SMALMTFTL	FYTDFVGEGL	300
65	YQGVRAEPG	TEARRHYDEG	VRMSLGLFL	QCAISLVFSL	VMDRLVQRFQ	TRAVYLASVA	360
	AFPVAAAGAT	LSHSAVVATA	SAALTGPTFS	ALQILPYTLA	SLYHREKQVF	LPKYRGDTGG	420
	ASSEDLSMTS	FLPGPKPGAP	PNNGHVAGAG	SGLLPPPPAL	CGASACDVSV	RVVVGEPTEA	480
	RVVVGRGICL	DLAILDSAPL	LSQVAPSLPM	GSIVQLSQSV	TAMVSAAGL	GLVATYPATQ	540
	VVFDRSLAK	YSA					

		SEQ ID NO:205 PAJ3 DNA SEQUENCE					
Nucleic Acid Accession #:		AK002126					
Coding sequence:		1-1593 (underlined sequences correspond to start and stop codons)					

75	1	11	21	31	41	51	
	ATGTTTCCGC	GGGGGCTGCT	TGCGTGGATT	TCCCGGGTGG	TGGTTTGTCT	GGTGCTCCTC	60
	TGCTGTGCTA	TCTCTGTCTC	GTACATGTTG	GCCTGCACCC	CAAAAGGTGA	CGAGGAGCAG	120
80	CTGGCACTGC	CCAGGGCCAA	CAGCCCCACG	GGGAAGGAGG	GGTACCAGGC	CCTCTCTCAG	180
	GAGTGGGAGG	AGCAGCACCG	CAACTACGTG	AGCAGCCTGA	AGCGGCAGAT	CGCACAGCTC	240

5  
 10  
 15  
 20  
 25

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AAGGAGGAGC TGCAGGAGAG GAGTGAGCAG CTCAGGAATG GGCAGTACCA AGCCAGCGAT 300
GCTGCTGGCC TGGGTCTGGA CAGGAGCCCC CCAGAGAAAA CCCAGGCCGA CCTCTGGCC 360
TTCCTGCACCT CGCAGGTGGA CAAGGCAGAG GTGAATGCTG GCGTCAAGCT GGCACAGAG 420
TATGACAGCAG TGCTTTTGA TAGCTTTACT CTACAGAAGG TGTACCAGCT GGAGACTGGC 480
CTTACCCGCC ACCCCGAGGA GAAGCCTGTG AGGAAGGACA AGCGGGATGA GTTGGTGGAA 540
GCCATTGAAT CAGCCTTGGA GACCCTGAAC AATCCTGCAG AGAACAGCCC CAATCACCGT 600
CCTTACACGG CCTCTGATTT CATAGAAGGG ATCTACCGAA CAGAAAGGGA CAAAGGGACA 660
TTGTATGAGC TCACCTTCAA AGGGGACCAC AAACAGGAAT TCAAACGGCT CATCTTATTT 720
CGACCATTCG GCGCCATCAT GAAAGTGAAA AATGAAAAGC TCAACATGGC CAACAGCTTT 780
ATCAATGTGA TCGTGCTCT AGCAAAAAGG GTGGACAAGT TCCGGCAGTT CATGCAGAA 840
TTCAAGGAGA TGTGATTGA CGAGGATGGG AGAGTCCATC TCACTGTGTG TTACTTTGGG 900
AAAGAAGAAA TAAATGAAAT CAAAGGAATA CTTGAAAACA CTTCCAAAGC TGCCAACTTC 960
AGGAACCTTA CCTTCATCCA GCTGAATGGA GAATTTTCTC GGGGAAAGGG ACTTGATGTT 1020
GGAGCCCGCT TCTGGAAGGG AAGCAACGTC CTCTCTTTT TCTGTGATGT GGACATCTAC 1080
TTACATCTG AATTCCTCAA TACGTGTAGG CTGAATACAC AGCCAGGGAA GAAGGTATTT 1140
TATCCAGTTC TTTTCAGTCA GTACAATCCT GGCATAATAT ACGGCCACCA TGATGCAGTC 1200
CCTCCCTTGG AACACGAGCT GGTCAATAAG AAGGAAACTG GATTTTGGAG AGACTTTGGA 1260
TTTGGGATGA CGTGTGAGTA TCGGTGAGC TTCAATCAATA TAGGTGGGTT TGATCTGGAC 1320
ATCAAAGGCT GGGGCGGAGA GGAATGTGAC CTTTATCGCA AGTATCTCCA CAGCAACCTC 1380
ATAGTGGTAC GAGCGCTGT GCGAGGACTC TTCCACCTCT GGCATGAGAA GCGCTGCATG 1440
GAGCAGTGA CCCCCAGCA GTACAAGATG TGCAATGAGT CCAAGGCCAT GAACAGGGCA 1500
TCCACAGGCC AGCTGGGCAT GCTGGTGTTC AGGCACGAGA TAGAGGCTCA CCTTCGCAAA 1560
CAGAAACAGA AGACAAGTAG CAAAAAACA TGA
  
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## SEQ ID NO:206 PAJ Protein sequence:

Protein Accession #: NP\_060841

30  
 35  
 40

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1 11 21 31 41 51
MVRRLGLAM SRVVLLVLL CCAISVLYML ACTPKGDEEQ LALPRANSPT KREGYQAVLQ 60
EMEQHRRNV SSKRQIAQL KEELQERSEQ LRNGQVQASD AAGLGLDRSP PEKTQADLLA 120
FLHSQVDAE VNAQVILATE YAAVPPDSFT LQKVYQLETG LTRHPEEPKV RKDKRDELVE 180
ALSALETIN NPAENSPNHR PYTASDFIEG IYRTERDKGT LYELTFKGDH KHEPKRLILF 240
RPFQPIKVK NEKLMAANTL INVIVPLAKR VDKFRQFMQN FREMCIEQDG RVHLTVVYFG 300
KEEINEVKGI LENTSKAAMP RNFTPIQLNG EFSRGRGLDV GARFWKGSNV LLFPDVIDY 360
FTSEFLHYCR INTQPGKKVAV YPVLFSQYNP GLIYGHDAV PPLEQQLVIK KETGFWRDFG 420
FGMTCCQVRS FIMIGGFDLN IXGWGGEDVB LYRKYLSNL IUVRTFVRGL FHLWHEKRCM 480
DELTFEQYKM CMQSKAMNEA SHGQLGMLVF RHEIEHLRK QKQKTSKKT
  
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## SEQ ID NO:207 PAJ5 DNA SEQUENCE

Nucleic Acid Accession #: AF169723

Coding sequence: 1-2712 (underlined sequences correspond to start and stop codons)

45  
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 55  
 60  
 65  
 70  
 75  
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1 11 21 31 41 51
ATGATTCCTG TATTGACATC AAAAAAAGCA AGTGAATTAC CAGTCAGTGA AGTTGCAAGC 60
ATTCTCCAAAG CTGATCTTCA GAATGGTCTA AACAAATGTG AAGTTAGTCA TAGGCGAGCC 120
TTTCATGGCTT GGAATGAGTT TGATATTAGT GAAGATGAGC CACTGTGGAA GAAGTATATT 180
TCTCAGTTTA AAAATCCCTT TATTATGCTG CTCTCGGCTT CTGCACTCAT CAGTGTTTAA 240
ATGCATCAGT TTGATGATGC CGTCAGTATC ACTGTGGCAA TACTTATCGT TGTTCAGATT 300
GCCTTTGTTC AGGAATATCG TTCAGAAAAA TCTCTTGAAG AATTGAGTAA ACTTGTGCCA 360
CCAGAATGCC ATTGTGTCCG TGAAGGAAAA TTGGAGCATA CACTTGCCCG AGACTTGGTT 420
CCAGGTGATA CAGTTTGCCT TTCTGTGGG GATAGAGTTC CTGCTGACTT ACGCTTGTTC 480
GAGGCTGTGG ATCTTTCCAT TGATGAGTCC AGCTTGACAG GTGAGACAAC GCCTTGTCTC 540
AAGGTGACAG CTCTTCAGCC AGCTGCAACT AATGGAGATC TTGCATCGAG AAGTAACATT 600
GCCTTTATGG GAACACTGGT CAGATGTGGC AAAGCAAAGG GTGTTGTCTAT TGGAACAGGA 660
GAAATTTCTG AATTTGGGGA GGTPTTTAAA ATGATGCAAG CAGAAGAGGC ACCAAAAACC 720
CCTCTGCAGA AGAGCATGGA CCTCTTAGGA AAACAACTTT CCTTTTACTC CTTTGGTATA 780
ATAGGAATCA TCATGTTGGT TGGCTGGTTA CTGGGAAAAG ATATCCTGGA AATGTTTACT 840
ATTAGTGTAA GTTTGGCTGT AGCAGCAATT CTTGAAAGTC TCCCATTTGT GGTCAAGTGT 900
ACGCTAGCTC TTGTGTGTAT GAGAATGTGT AAGAAAAGGG CCATTGTGAA AAGAGTGCCT 960
ATTGTTGAAA CTCTGGGCTG CTGTAATGTG ATTTGTTTCA ATAAAAGTGG AACACTGAGC 1020
AAGAATGAAA TGACTGTTAC TCACATATTT ACTTCAGATG GTCTGCATGC TGAGGTTTACT 1080
GGAGTTGGCT ATAATCAATT TGGGGAAGTG ATTGTTGATG GTGATGTTGT TCATGGATTTC 1140
TATAAACCAG CTGTTAGCAG AATTGTTGAG CGCGGCTGTG TGTGCAATGA TGCTGTAAAT 1200
AGAAACATA CTCTAATGGG GAAGCCAACA GAAGGGGCTC TAATTGTCTT TGCAATGAAG 1260
ATGGGTCTTG ATGGACTTCA ACAAGACTAC ATCAGAAAAG CTGAATACCC TTTTAGCTCT 1320
GAGCAAAAGT GGATGGCTGT TAAATGTGTA CACCGAACAC AGCAGGACAG ACCAGAGATT 1380
TGTTTTATGA AAGGTGCTTA CGAACAAGTA ATTAAGTACT GTACTACATA CCAGAGCAAA 1440
GGGCAGACCT TGACACTTAC TCAGCAGCAG AGAGATGTGT ACCAACAGA GAAGGCACGC 1500
ATGGGCTCAG CGGGACTCAG AGTCTCTGCT TTGGCTCTCT GTCCCTGAAC GGGACAGCTG 1560
ACATTTCTTG GCTTGGTGGG AATCAITGAT CCACCTAGAA CTGOTGTGAA AGAAGCTGTT 1620
ACAACTCTCA TTGCTCTCAG AGTATCAATA AAAATGATTA CTGGAGATTC ACAGAGAGCT 1680
GCAGTTGCAA TCGCCAGTCG TCTGGGATTG TATTCCAAAA CTTCACAGTC AGTCTCAGGA 1740
GAAGAAATGA ATGCAATGGA TGTTCAGCAG CTTCACAAA TAGTACCAAA GGTTCAGTA 1800
TTTTACAGAG CTAGCCCAAG GCACAAGATG AAAATTTATTA AGTCGCTACA GAAGAACGGT 1860
TCAGTTGTAG CCATGACAGG AGATGGAGTA AATGATGCAG TTGCTCTGAA GGCTGCAGAC 1920
  
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5 ATTGAGTGTG CGATGGGCCA GACTGGTACA GATGTTTGCA AAGAGGCAGC AGACATGATC 1980  
 CTAGTGGATG ATGATTTTCA AACCATAATG TCTGCAATCG AAGAGGGTAA AGGGATTAT 2040  
 AATAACATTA AAAATTTTCG TAGATTCCAG CTGAGCACGA GTATAGCAGC ATTAACATT 2100  
 ATCTCATTGG CTACATTAAT GAACTTTTCT AATCCTCTCA ATGCCATGCA GATTTTGAGG 2160  
 ATCAATATTA TTATGGATGG ACCCCAGCTG CAGAGCCTTG GAGTAGAACC AGTGGATAAA 2220  
 GATGTCATTC GTAAACCTCC TCGCAACTGG AAAGACACGA TTTTGACTAA AAACCTTGATA 2280  
 CTAAAAATAC TTGTTTCATC AATAATCATT GTTTGTTGGA CTTTGTTTGT CTCTGGCGT 2340  
 GAGCTACAGG ACAATGTGAT TACACCTCGA GACACACAA TGACCTTCAC ATGCTTTGTG 2400  
 10 TTTTGTGACA TGTTCAATGC ACTAAGTTCC AGATCCGAGA CCAAGTCTGT GTTTGAGATT 2460  
 GGACTCTGCA GTAAATAGAT GTTTTGTCTT GCAGTCTCTG GATCCATCAT GGGACAATTA 2520  
 CTAGTTATTT ACTTTCTCTC GCTTCAGAAG GTTTTTCAGA CTGAGAGCCT AAGCATACTG 2580  
 GATCTTTTGT TTTCTTTGGG TCTCACCTCA TCAGTGTGCA TAGTGGCAGA AATTATAAAG 2640  
 AAGGTTGAAA GGAGCAGGGA AAAGATCCAG AAGCATGTTA GTTCGACATC ATCATCTTTT 2700  
 CTTGAAGTAT GA

SEQ ID NO:203 PAJ5 Protein sequence:  
 Protein Accession #: AAF27813

20 1 11 21 31 41 51  
 MIPVLTSKKA SELPVSEVAS ILQADLQNL NKCEVSHERRA PHGWNEFDIS EDEPLMKKYI 60  
 SQFKNPLIML LLASAVISVL MHQFDDAVSI TVAILIVTVV AFVQEVSEK SLEELSKLVP 120  
 PECHCVREGK LEHTLARDLV PGDTVCLSVG DRVPADLRFL EAVDLSDIES SLTGETTPCS 180  
 25 KVTAPQPAAT NGDLASRSNI AFMTLVRCG KAKGVVIGTG ENSEPGEVFK MMQAEAPKT 240  
 FLQKSMDLLG KQLSFYSPGI IGIIMLVGWL LKGDILEMFT ISVSLAVAAI PEGLEIVTVV 300  
 TLALGVHRMV KKRAIVKLLP IVETLGCNV ICSDKGTLT KNEMTWTHIF TSDGLHAEVT 360  
 GVGYNQPGVB IVDCDVHGF YNPAVSRIVE AGCVCDNAVI RNNTLMKPT EGALIALAMK 420  
 MGLDGLQDDY IRKAEYFPSS BQKMAVKCV HRTQQRPEI CFMKGAYBQV IKYCTTYQSK 480  
 30 GQTLTLTQQQ RDVYQGEKAR MGSAGLRVLA LASGPELQGL TPLGLVGLID PPRGTVKEAV 540  
 TTLASVSI KMVTGDSQET AVAIAASRLGL YSKTSQSVSG EEDIDAMDVOQ LSQIVPKAV 600  
 FYRASPRHRM KIKLSLQKNG SVVAMTGDGV NDAVALKAAD IGVAMGTGT DVCKEADMI 660  
 LVDDDFDTM SAIEEGKGIY NNINKNFVRFO LSTIAALTL ISLATLMNFP NPLNAMQILW 720  
 35 ELRDNVTTPR QTLTWTPTCFV FFMFNLASS RSQTSVPEI GLCSNRMFY AVLSIMGQL 840  
 LVITYPFLQK VPTESLSIL DLLFLGLITS SVCTVAEIK KVEREREKIQ KHVSTSSSF 900  
 LEV

# SEQ ID NO:209 PAV4 VARIANT 1 DNA SEQUENCE

Nucleic Acid Accession #: NG2096  
 Coding sequence: 1-1284 (underlined sequences correspond to start and stop codons)

45 1 11 21 31 41 51  
 ATGGGCTACC AGAGGCAGGA GCCTGTCTATC CGCCCGCAGA GAGGATTGCC TTATTCATG 60  
 AAGCAAGCTG GGTTCCTTT GGGAAATATG CTTTATCTCT GGGTTTCATA TGTACAGAC 120  
 TTTTCCCTTG TTTTATGTAT AAAAGGAGGG GCCCTCTCTG GAACAGATAC CTACAGCTCT 180  
 TTGCTCAATA AAACCTTTCGG CTTTCCAGGG TATCTGTCTC TCTCTGTCTC TCAGTTTGTG 240  
 50 TATCTCTTTA TAGCAATGAT AAGTACAAAT ATAAATAGCT GAGATACTTT GAGCAAAGTT 300  
 TTTCAAGAA TCCAGGAGT TGATCCTGAA AACGTGTTA TTGGTCGCCA CTTCATTATT 360  
 GGACTTTCCA CAGTTACCTT TACTCTGCTT TTATCTTGT ACCGAAATAT AGCAAAGCTT 420  
 GGAAAGTCTT CCTCATCTCT TACAGTTTAA ACAACTCTGA TCTTGGAAAT TGTATGGCA 480  
 AGGGCAATT CACTGGGTCC ACACATACCA AAAACAGAAG ACGCTTGGGT ATTTGCAAAG 540  
 55 CCCAATGCCA TTCAAGCGGT CGGGGTTATG TCTTTTGCTT TTATTTGCCA CCATAACTCC 600  
 TTTCTAGTTT ACAGTTCTCT AGAAGAACCC ACAGTAGCTA AGTGGTCCCG CCTTATCCAT 660  
 ATGTCCATCG TGATTTCTGT ATTATCTGT ATATTCTTTG CTACATGTGG ATACTTGACA 720  
 TTTACTGGCT TCACCCAAGG GGACTTATTT GAAATTTACT GCAGAAATGA TGACCTGGTA 780  
 ACATTTGGAA GATTTTGTTA TGGTGTCACT GTCAATTTGA CATACCTAT GGAATGCTTT 840  
 60 GTGACAAAG AGGTAAATGC CAATGTGTT TTTGGTGGGA ATCTTTTATC GGTTTTCCAC 900  
 ATTGTTGTAA CAGTGATGGT CATCACTGTA GCCACGCTTG TGTCAATGCT GATTGATTGC 960  
 CTGGGATAG TCTTAGAAGT CAATGGGTG CTCTGTGCAA CTCCCTCAT TTTTATCAT 1020  
 CCATCAGCCT GTTATCTGAA ACTGTCTGAA GAACCAAGGA CACACTCCGA TAAGATTATG 1080  
 TCTTGTGCA TGCTTCCCAT TGGTCTGCTG GTGATGGTTT TTGGATTCTG CATGGCTATT 1140  
 65 ACAAACTACT AAGACTGCAC CCATGGGAG GAAATGTCT ACTGCTTTC TGACAATTT 1200  
 TCTCTCACA ATACCTCAGA GTCTCATGTT CAGCAGACAA CACAACCTTC TACTTTAAAT 1260  
 ATTAGTATCT TTCAACTCGA GTAA

SEQ ID NO:210 PAV4 Variant 1 Protein sequence:  
 Protein Accession #: none found

70 1 11 21 31 41 51  
 MGYQRQEPVI PFQRLPYSM KQAGPFLGIL LLFWVSVD PSLVLLIRGG ALSGTDYQS 60  
 75 LVNKTFFGPG YLLSLVQLF YPFIAHLSYN ILAGDTLSKV FQRIQGVDP NVFIGHPII 120  
 GLSTVTFTLE LSLYRNIAKL GKVSISTGL TTLILGIVHA RAISLGFHIP KTEDAWVFAK 180  
 FNAIQAVGM SFAPICHNS FLVYSSLEEP TVAKWSRLIH MSIVISVPIC IFFATCGYLT 240  
 FGFQDGLD ENYCRNDLLV TFGRFYGVY VILTYPHECF VTREVLAVNF FGNLSSVPH 300  
 80 IVVTVMVTV ATVLVSLIDC LGIVLELNGV LCATPLIFII PSACYLKLSE EPRTHSKIM 360  
 SCVHLPIGAV VMVGFVMAI TNYQDCTHQG EMPYCFPNF SLNTSSESH QQTQLSTLN 420

ISIFQLE

## SEQ ID NO:211 PAV4 VARIANT 2 DNA SEQUENCE

5 Nucleic Acid Accession #: N62096  
Coding sequence: 1-1203 (underlined sequences correspond to start and stop codons)

10 1 11 21 31 41 51  
| | | | | |  
ATGGGCTACC AGAGGCAGGA GCCTGTCTATC CCGCCGCGAGT TTTCCTTGT TTTATTGATA 60  
AAAGGAGGGG CCCTCTCTGG AACAGATACC TACCAGTCTT TGGTCAATAA AACTTTCGGC 120  
TTTCCAGGGT ATCTGCTCCT CTCTGTCTCTT CAGTTTTGTG ATCTTTTAT AGCAATGATA 180  
AGTTACAAATA TAATAGCTGG AGATACTTTG AGCAAAAGTTT TTCAAAGAAT CCCAGGAGTT 240  
15 GATCCTGAAA ACGTGTATTAT TGGTCGCCAC TTCAATTATG GACTTTCAC AGTTACCTTT 300  
ACTCTGCCTT TATCTTGTA CCGAAATATA GCAAGCTTG GAAAGGTCTC CCTATCTCT 360  
ACAGGTTTAA CAACCTCTGAT TCTTGGAATT GTAATGGCAA GGGCAATTTC ACTGGGTCCA 420  
CACATACCAA AAACAGAGA CGCTTGGGTA TTTGCAAGC CCAATGCCAT TCAAGCGGTC 480  
GGGTTATGT CTTTGTGCTT TATTTGCCAC CATAACTCTT TCTTAGTTTA CAGTTCTCTA 540  
20 GAAGAACCAC CAGTAGCTAA GTGGTCCCGC CTATCCATA TGTCCATCGT GATTCTCTGA 600  
TTTATCTGTA TATCTTTGTC TACATGTGGA TACTTGACAT TACTGGCTT CACCAAGGG 660  
GACTTATTGG AAAATTACTG CAGAAATGAT GACCTGGTAA CATTGGGAAG ATTTTGTAT 720  
GGTGTCTAGT TCATTTTGAC ATACCTCATG GAATGCTTTG TGACAAGAGA GGTAAATGCC 780  
AATGTGTTT TTGGTGGGAA TCTTTCTATG GTTTCCACA TTGTGTGAAC AGTGATGGTC 840  
25 ATCACTGTAG CCACGCTTGT GTCAATGCTG ATTGATTGCC TCGGGATAGT TCTAGAACTC 900  
AATGGTGTGC TCTGTGCAAC TCCCTCATTT TTTATCATTC CATCAGCCTG TTTATCTGAAA 960  
CTGTCTGAAG AACCAAGGAC ACACCTCGAT AAGATTATGT CTGTGTTCAT GCTTCCCAT 1020  
GGTGTCTGGG TGATGGTTT TGGATTGCTC ATGGCTATTA CAAATACTCA AGACTGCACC 1080  
CATGGGCAGG AATGTGTTCA CTGCTTTCTC GACAAATTTCT CTCTACAAA TACCTCAGAG 1140  
30 TCTCATGTCT AGCAGACAC ACAACTTTCT ACTTTAAATA TTAGTATCTT TCAACTCGAG 1200  
TAA

## SEQ ID NO:212 PAV4 Variant 2 Protein sequence:

35 Protein Accession #: none found

40 1 11 21 31 41 51  
| | | | | |  
MGYQRQEPVI PPQFSLVLLI KGGALSGTDT YQSLVNKTFG FPGYLLSVL QFLYPFIAMI 60  
SYNLIAGDTL SKVFQRIQGV DPENVFIGRH FIIGLSTVTF TLPLSLYRNI AKLGRVSLIS 120  
TSLTTLILGI VMARAIISLG HLPKTEDAWV FAKPNIAQAV GVMSFAPICH HNSFLVYSSL 180  
ESPTVAKWSR LIHMSIVISV FICIPFATCC YLFTPTGTQG DLFENYCRND DLVTFGRFCY 240  
45 GVTVILTYPM ECFPTREVLIA NVFFGGNLSS VFHIVVTVMV ITVATLVSLD IDCLGIVLEL 300  
NGVLCAETPLI FTIPSACYLK LSEEPRTSD KIMSCVMLPI GAVVHVFPV MATNTQDCT 360  
HGQEMFYCFP DNPSLNTSE SHVQQTQLS TLNISIFQLE

## SEQ ID NO:213 PAV4 VARIANT 3 DNA SEQUENCE

50 Nucleic Acid Accession #: N62096  
Coding sequence: 1-1140 (underlined sequences correspond to start and stop codons)

55 1 11 21 31 41 51  
| | | | | |  
ATGGGCTACC AGAGGCAGGA GCCTGTCTATC CCGCCGCGAG TCAATAAAAC TTTCGGCTTT 60  
CCAGGGTATC TGCTCTCTCT TGTTCCTCAG TTTTGTATC CTTTATAGC AATGATAAGT 120  
TACAAATATA TAGCTGGAGA TACTTTGAGC AAAGTTTTC AAAGAATCCC AGGAGTTGAT 180  
CCTGAAAACG TGTTTATTTG TCGCCACTTC ATTATTTGAC TTTCCACAGT TACCTTTACT 240  
CTGCCTTTAT CTTGTACCG AAATATAGCA AAGCTTTGAA AGGTCTCCCT CATCTCTACA 300  
60 GGTTTAAACA CTCTGATCTT TCGAATTGTA ATGGCAAGGG CAATTTCAC TGGTCCACAC 360  
ATACCAAAAA CAGAAGACGC TTGGGTATTT GCAAGGCCA ATGCCATTC AGCGTCCGG 420  
GTTATGTCCT TTGCATTTAT TTGCCACCAT AACTCCTTCT TAGTTTACAG TTCTCTAGAA 480  
GAACCCACAG TAGCTAAGTG GTCCCGCTT ATCCATATGT CCATCGTGAT TTCTGTATT 540  
ATCTGTATAT TCTTTGCTAC ATGTGGATAC TTGACATTTA CTGGCTTCAC CCAAGGGGAC 600  
65 TTATTTGAAA ATTACTGCAG AAATGATGAC CTGGTAACAT TTGGAAGATT TTGTTATGGT 660  
GTCACTGTCA TTTTGACATA CCCTATGGAA TGCTTTGTGA CAAGAGAGGT AATTGCCAAT 720  
GTGTTTTTTG GTGGGAATCT TTCATCGGTT TTCCACATG TTGTACAGT GATGGTCATC 780  
ACTGTAGCCA CGCTGTGTCT ATTGCTGATT GATTGCCCTG GGATAGTTCT AGAATCTCAAT 840  
GGTGTGCTCT GTGCAATCTC CCTCATTTT ATCATTTCCAT CAGCCTGTTA TCTGAAACGT 900  
70 TCTGAAGAAC CAAGGACACA CTCGGATAAG ATTATGTCTT GTGTCACTGT TCCCATTTGT 960  
GCTGTGGTGA TGTGTTTGTG ATTCGTCTAT GCTATTACAA ATACTCAAGA CTGCAOCCAT 1020  
GGCAGGAAA TGTCTACTG CTTTCTGAC AATTCTCTC TCACAAATAC CTCAGAGTCT 1080  
CATGTTCTAGC AGACAACACA ACTTTCTACT TTAATATTTA GTATCTTTCA ACTCAGTAA

## SEQ ID NO:214 PAV4 Variant 3 Protein sequence:

75 Protein Accession #: none found

80 1 11 21 31 41 51  
| | | | | |

5  
 MGYQRQEPVI PFQVNETFGF PGYLLLSVLQ FLYPFIAMIS YNIIAGDTLS KVFQRIQGV D 60  
 PENVFIRGRH IIGLSTVTFI LPLSLYRNIA KLGRVSLIST GLTTLILGIV MARAISLGPH 120  
 IPKTEDAWVF AKPNAIQAVG VMSFAPICHH NSFLVYSSLE BPTVAKWSRL IHMSIVISVF 180  
 ICIFPATCGY LFTFTGFTQGD LFENYCRNDD LVTFGRFCYG VTVILTYPME CFTVREVIAN 240  
 VFPGNLSVSV PHIVVTVMVI TVATLVSLLI DCLGIVLELN GVLCAITPLIF IIPSACYLKL 300  
 SEEPRTSHDK IMSCVMLPIG AVVMVFGFVM AITNTQDCTH GQEMFYCFPD NPSLTNTSES 360  
 HVQQTTLQST LNISIFQLE

10

## SEQ ID NO:215 PAV4 VARIANT 4 DNA SEQUENCE:

Nucleic Acid Accession #: N62098  
 Coding sequence: 1-1389 (underlined sequences correspond to start and stop codons)

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1 11 21 31 41 51  
 ATGGGGTACC AGAGGCAGGA GCTGTGTCAT CCGCCGCGAGA GAGATTAGTA TGACAGAGAA 60  
 ACCCTTGTMT CTGAACATGA GTATAAAGAG AAAACCTGTC AGTCTGCTGC TCTTTTAAAT 120  
 GTTGTCACAT CGATTATAGG ATCTGGTATA ATAGGATTGC CTTATTCAAT GAAGCAAGCT 180  
 GGGTTTCCTT TGGGAATATT GCTTTTATTC TGGGTTTCAT ATGTTACAGA CTTTTCCTCT 240  
 GTTTTATTGA TAAAGGAGG GGCCTCTCTT GGAACAGATA CCTACCAGTC TTTGGTCAAT 300  
 AAAACTTTTCG GCTTTCAGG GTATCTGCTC CTCTCTGTTC TTCAGTTTTC GTATCCTTTT 360  
 ATAGCAATGA TAAGTTACAA TATAATAGCT GGAGATACTT TGAGCAAAAGT TTTTCAAAGA 420  
 ATCCCAGGAG TTGATCCTGA AAACGTGTTT ATTGGTCGCC ACTTCATTAT TGGACTTTC 480  
 ACAGTTACCT TTAATCTGCC TTTATCTCTG TACCGAAATA TAGCAAAAGCT TGGAAAGGTC 540  
 TCCCTCATCT CTACAGGTTT AACAACTCTG ATCTCTGGAA TTGTAATGGC AAGGGCAATT 600  
 TCACTGGGTC CACACATACC AAAAACAGAA GACGCTTGGG TATTTCGAAA GCCCAATGCC 660  
 ATTCAAGCGG TCGGGGTATG GTCTTTTGCA TTTATTGTCC ACCATAACTC CTCTCTAGTT 720  
 TACAGTTCTC TAGAAGAAC CACAGTAGCT AAGTGGTCCC GCTTATCCCA TATGTCCATC 780  
 GTGATTCTCT TATTATCTCT TATATTCTTT GCTACATGTG GATACTTGAC ATTTACTTGC 840  
 TTCACCCAGG GGGACTTATT TGAATAATAC TGCAGAAATG ATGACCTGGT AACATTGTGA 900  
 AGATTTTGTT ATGGTGTCAC TGTCAATTTG ACATACCCTA TGGAAATGCTT TGTGACAAGA 960  
 GAGGTAAATG CCAATGTGTT TTTTGGTGGG AATCTTTTCA CGGTTTTCCT CATTGTGTGA 1020  
 ACAGTATAGG TCATCACTGT AGCCACGCTT GTGTCACTGC TGATTGATTC CCTCGGGATA 1080  
 GTTCTAGAAC TCAATGGTGT GCTCTGTGCA ACTCCCTCA TTTTATCAT TCCTACAGCC 1140  
 TGTATCTCCA AACTGTCTGA AGAACCAAGG ACACACTCCG ATAAGATTAT GTCTTGTGTC 1200  
 ATGCTTCCCA TTGGTGCTGT GGTGATGGTT TTTGGATTGC TCATGGCTAT TACAAATACT 1260  
 CAAGACTGCA CCCATGGGCA GGAATGTTC TACTGCTTTC CTGACAAATT CTCTCTACA 1320  
 AATACCTCAG AGTCTCATGT TCAGCAGACA ACACAACCTT CTACTTTAA TATTAGTATC 1380  
 TTTCAATGA

## SEQ ID NO:216 PAV4 Variant 4 Protein sequence:

Protein Accession #: none found

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1 11 21 31 41 51  
 MGYQRQEPVI PFQRDLDDRE TLVSEHEYKE KTCQSAALFN VVNSIIGSGI IGLPYSMKQA 60  
 GFPLGILLLE WVSVYDFSL VLLIKGGALS GTDTYQSLVN KTFGPPGYLL LSVLQFLYFF 120  
 IAMISYNLIA GDTLSKVFQR IPGVDFENVF IGRHFIIIGLS TTVTTLPLSL YRNIAKLGKV 180  
 SLISTGLTTL ILGIVMARAI SLPFLPKTE DAWVFAKFA IQAVGVMSFA FICHENSFLV 240  
 YSSLEETVA KWSRLHMSI VISVPICIFF ATCGVLTFTG TQGDLEFNY CRNDLAVTFG 300  
 RFCYGVTVIL TYFMECFVTR EVIANVFFGG NLSSVPHIVV TVMVTIVATL VSLIIDCLGI 360  
 VLELNGVLCA TPLIFIIPSA CYLKLSEEPH THSDKIMSCV MLPIGAVVMV FGFVMAITNT 420  
 QDCTEGQEMF YCFEDNFSLT NTSESHVQQT TQLSTLNI SI PQ

## SEQ ID NO:217 PAV9 DNA SEQUENCE

Nucleic Acid Accession #: NM\_017636  
 Coding sequence: 1-3501 (underlined sequences correspond to start and stop codons)

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1 11 21 31 41 51  
 ATGGAGGATG CCTTCGGGGC AGCCGTGGTG ACCGTGTGGG ACAGCGATGC ACACACCAG 60  
 GAGAGGCCCA CCGATGCCTA CGGAGAGCTG GACTTCAAGG GGGCCGGCCG CAAGCACAGC 120  
 AATTTCCTCC GGCTCTCTGA CCGAACGGAT CCAGCTGCAG TTTATAGTCT GGTACACAGC 180  
 ACATGGGGCT TCCGTGCCCC GAACCTGGTG GTGTCACTGC TGGGGGGATC GGGGGGGCCC 240  
 GTCTCTCAGA CCGGTGCGCA GGACCTGCTG CGTCTGTGGC TGGTGGGGGC TGCCACAGAG 300  
 ACAGAGCCTT GGATTGTAC TGGGGGTCTG CACACGGGCA TCGGCGGGCA TGTGGGTGTG 360  
 GCTGTACGGG ACCATCAGAT GGCCAGCACT GGGGGCACCA AGTGTGTGGC CATGGGTGTG 420  
 GCGGCTTGGG GTGTGGTCCG GAATAGAGAC ACCCTCATCA ACCCCAAAGG CTGCTTCCCT 480  
 GCGAGGTACC GGTGGCGCGG TGACCCGGAG GACGGGGTCC AGTTTCCCTT GGACTACAAC 540  
 TACTCGGCCT TCTTCTGTGT GGACGACGGC ACACACGGCT GCCTGGGGGG CGAGAACCGC 600  
 TTCCGCTTGC GCTTGGAGTC CTACATCTCA CAGCAGAGA CGGGCGTGGG AGGGACTGGA 660  
 ATTGACATCC CTGTCTGTGT CCTCTGATT GATGGTGATG AGAAGATGTT GACGCGAATA 720  
 GAGAAGGCCA CCCAGGCTCA GCTCCCATGT CTCTCTGTGG CTGGCTCAGG GGGAGCTCCG 780  
 GACTGCCTGG CGAGAGCCCT GGAAGACACT CTGGCCCCAG GGAGTGGGGG AGCCAGGCAA 840  
 GGGCAAGCCC GAGATCGAAT CAGGCGTTTC TTTCCCAAAG GGGACCTTGA GTTCTGCAG 900  
 GCCCAGGTGG AGAGGATTAT GACCCGGAAG GAGCTCCTGA CAGTCTATTC TTCTGAGGAT 960

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GGGTCTGAGG AATTCGAGAC CATAGTTTTC AAGGCCCTTG TGAAGGCCTG TGGGAGCTCG 1020  
GAGGCCTCAG CTTACCTTGA TGAGCTGCGT TTGGCTGTGG CTGTGAACCG CGTGGACATT 1080  
GCCAGAGTGC AACTCTTTTC GGGGACATC CAATGGCGGT CCTTCCATCT CGAAGCTTCC 1140  
CTCATGTAGC CCTGTCTGAA TGACCGGCTT GAGTTCGTGC GCTTGCATCT TATCCACGGC 1200  
CTCAGCCTGG GCCACTTCCT GACCCCGATG CGCCTGGCCC AACTCTACAG CGCGCGCGCC 1260  
TCCAACCTGC TCATCCGCAA CCTTTTGGAC CAGGCGTCCC ACAGCGCAGS CACCAAGGCC 1320  
CCAGCCTTAA AAGGGGGAGC TGCGGAGCTC CGGCCCCCTG ACGTGGGGCA TGTGCTGAGG 1380  
ATGCTGCTGG GGAAGATGTC CGCGCGGAGG TACCCCTCCG GGGCGCGCTG GGACCCCTCAC 1440  
CCAGGCCAGG GCTTCGGGGA GAGCATGTAT CTGCTCTCGG ACAAGGCCAC CTGCGCGCTC 1500  
TCGTGGATG CTGGCCTCGG GCAGGCCCCC TGGAGCGACC TGCTTCTTTC GGCAGTGTTC 1560  
CTGAACAGGG CACAGATGGC CATGTACTTC TGGGAGATGG GTTCCAATGC AGTTTCTCTCA 1620  
GCTCTTGGGG CCTGTTTGTCT GCTCCGGGTG ATGGCAGGCC TGGAGCCTGA CGCTGAGGAG 1680  
GCAGCACGGA GGAAAGACCT GCGGTTCAGG TTTGAGGGGA TGGGCGTTGA CCTCTTTGGC 1740  
GAGTGTATTC GCAGCAGTGA GGTGAGGGCT GCCCGCTCC TCTTCCGTGC CTGCGCGCTC 1800  
TGGGGGATG CTGCTGCTCT CCAGCTGGCC ATGCAAGCTG ACGCCCGTGC CTCTTTTGCC 1860  
CAGGATGGGG TACAGTCTCT GCTGACACAG AAGTGGTGGG GAGATATGGC CAGCACTACA 1920  
CCCATCTGGG CCTGCTCTCT CGCCTTCTTT TGCCCTCCAC TCATCTACAC CCGCTCTATC 1980  
ACCTTCAGGA AATCAGAAGA GGAGCCACAC CGGAGGAGC TAGAGTTTGA CATGGATAGT 2040  
GTCAATTAAT GGGAAAGGGC TGTCGGGACG GCGGACCCAG CCGAGAAGAC GCGCTGGGG 2100  
GTCCCGCCCG AGTGGGGCCG TCCGGGTGTC TGGCGGGGCC GCTGCGGGGG GCGCGGTGTC 2160  
CTACGCCCTG GGTCTCACTT CTGGGGCGCG CCGGTGACCA TCTTCATGGG CAACCTGGTC 2220  
AGCTACTGTC TGTTCCTGCT GCTTTTCTCG CGGGTGTGTC TCGTGGATTT CCAGCCGGCG 2280  
CCGCCCGGCT CCTGAGAGCT GCTGCTCTAT TCTTGGGCTT TCAGCTGCTT GTGCGAGGAA 2340  
CTGCGCCAGG GCCTGAGCGG AGCGGGGGGG AGCCTCGCCA GCGGGGGCCC GGGGCTTGGC 2400  
CATGCTCTAC TGAGCCAGCG CCTGCGCTTC TACCTCGCCG ACAGCTGGAA CCAAGTGGAC 2460  
CTAGTGGCTC TCACCTGCTT CCTTCTGGGG GTGGGCTGCC GGCTGACCCC GGGTTTGTAC 2520  
CACTTGGGCC GCACTGACCT CTGCATCGAC TTCAATGTTT TCAGGTGGCG GCTGCTTAC 2580  
ATCTTCAAGG TCAACAAACA GCTGGGGCCC AAGATGTGCA TCGTGAAGAA GATGATGAAG 2640  
GACGTGTCTT TCTTCTCTTT CTTCCTCGGC GTGTGGCTGG TAGCCTATGG CGTGGCCACG 2700  
GAGGGCAGTA TGAGGCCACG GGACAGTGC TCACCAAGTA TCTTGGCGCG GGTCTTCTAC 2760  
CGTCCCTACC TGCAATCTT CGGCGAGATT CCCCAGGAG ACATGGACCT GGCCTCTATG 2820  
GAGCAGCAGA ACTGCTGCTC GGAGCCCGGC TTCTGGGCAC ACCCTCTCGG GCGCCAGGCG 2880  
GGCACTCGCG TCTCCAGTA TGCCAACTGG CTGGTGGTGC TGCTCTCTGT CATCTTCTCT 2940  
CTCTGGGCA ACTCTCTGCT GGTCAACTTG CTCAATGCCA TGTTCAGTTA CCAATTCGGC 3000  
AAAGTACAGG GCAACAGCGA TCTTACTGAG AAGGCCAGC GTTACCCGCT CATCCGGGAA 3060  
TTCCACTCTC GGGCCGGGCT GGGCCCGCCC TTTATCTGCA TCTCCACTT CGGCTTCTCT 3120  
CTCAGCAAT TGTGCGAGCG ACCCCGAGAG CCCCAGCGCT CCTCCCGGCG CTTCCAGCAT 3180  
TTCCGGGTTT AACTTTCTAA GGAAGCCGAG CGGAAGCTGC TAACGTGGGA ATCGGTGCAT 3240  
AAGGAGACT TTCTGCTGGC ACGCGCTAGG GACAAGCGGG AGAGCGACT CGAGCGTCTG 3300  
AAGCGCAGT CCGAGAAGGT GGAAGTGGCA CTGAACAGC TGGGACACAT CCGCGAGTAC 3360  
GAACAGCGCC TGAAGTGTCT GGAGCCGGAG GTCCAGCAGT GTAGCCCGCT CCTGGGGTGG 3420  
GTGGCCGAGG CCTGAGCGG CTCTGCCCTG CTGCCCCGAG ACCCCCTGAC 3480  
CTGCCCTGGT CCAAAGACTG A

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SEQ ID NO:218 PAV9 Protein sequence:  
Protein Accession #: none found

1 11 21 31 41 51  
MEDAFGAADV TWMSDAHTT EKPTDAYGEL DFTGAGRKES NPLRLSDRTD PAAVYSLVTR 60  
TWGFRAPNLV VSVLGGSGGP VLQTLQDL RRLVRAAQS TGAMIVTGGI HTGIGRHVGV 120  
AVRDEHMAST GGTKVAMGV APWGVVRNRD TLINPKGSPF ARYKRWGDPF DGVQFPFLDY 180  
YSAPFVLVDG THGCLGGENR PRLRLESYIS QKRTGVGGTG IDIPVLLLLL DGDRLMLTRI 240  
ENATQAQLFC LLVAGSGGAA DCLAETLEDT LAPGSGGARQ GEARDIRRRF FPKGDLVLQ 300  
AQVERIMTRK ELTTYSSSD GSEEFETIVL KALVKACGSS EASAYLDEL R LAVANNRVDI 360  
AQSELEFGDI QNRSHLEAS LMDALLNDRP EFVRLLIENG LSLGHFLTPM RLAQLYSAAP 420  
SNSLIRNLID QASHSAGTKA PALKGGAAEL RPPDVGHVLR MLLGHMCAPR YPSGGAWDPH 480  
PQQFGESMY LLSDKATSP LLDAGLGQAP WSDLLWALL LNRAQMAFY WEMGSNAVSS 540  
ALGACLLLRV MARLEPDAEE AARRKDLAPF FEGMGVDLFG EGYRSEVRA ARLLLRRCPL 600  
WGDATCLQLA MQADARAFFA QDGVQSLTQ KWWGDMASTT PIWALVLAFF CPPLIYTRLI 660  
TFRKSEEBPT REELEFMDMS VINGEGPVGT ADPAEKTPLG VPRQSGRPQC CGGRCGRRRC 720  
LRRWFHFWGA FVTIFMGNV SYLLELLIFS RVLLVDFQPA PPGSLELLLY FWAFTLLCEE 780  
LRQSLGGGG SLASGGPGPG HASLSQRLRL YLADSWNQCD LVALTCPLLG VGCRITPGLY 840  
HLGRTVLCTD FHVFTVRLRH IPTVNRQLGP KIVIVSKMK DVFFFLPFLG VWLVATGVAT 900  
EGLLRPRDS FPSILRRVPY RPYLQIFGQI PQEDMDVALM EHSNCSSEPG FWAHPGGAQA 960  
GTCVSYQYAN LVVLLVLIPL LVANILLVNL LIAMPSYTFG KVQNSDLYW KAQRVRLIRE 1020  
FHSRPAAPP FTVISHLRLL LRQLCRPRPS PQPSSPALEH FRVYLSKEAE RKLLTWESVH 1080  
KENFLARAR DKRESDSERL KRTSQKVDLA LKQLGHIREY BQRLKVLERE VQCSRVLW 1140  
VAEALSRSAL LPPGGPPPPD LPSKSD

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80

SEQ ID NO:219 PBF1 DNA SEQUENCE  
Nucleic Acid Accession #: AA054237  
Coding sequence: 1-894 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
ATGGAGCGCG GGGCGCTCGT CACGGCGCTC AGCCTCGGCC TCAGCCTGTG CTCCTTGGGG 60  
CTGCTCGTCA CGGCCATCTT CACCGACCA C TGGTACGAGA CCGACCCCGG GCGCCACAG 120  
GAGAGCTGCG AGCGCAGCGG CCGGGCGGCC GACCCCGCGG ACCAGAAGAA CCGCTTGATG 180

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CCGCTGTGCG ACCTGCGCGT GCGGGACTCG CCCCCTGCTG GCGCGCGGCT GCTCCCGGGC 240  
GGCCCGGGGC GCGCGGACCC CGAGTCTGCG CGCTCGCTCC TGGGGCTCGG CGGGCTGGAC 300  
GCCGAGTGGC GCCGGCCCGC CTTCGCCACC TACTCGGGCC TCTGGAGGAA GTGCTACTTC 360  
CTGGGCTACG ACCGGGACAT CGACACCCCTC ATCTTGAAAG GTATTGCGCA GCGATGCACG 420  
GCCATCAAGT ACCACTTTTC TCAGCCCATC CGCTTGCGAA ACATTCTTTT TAATTTAACC 480  
AAGACCATAC AGCAAGATGA GTGGCACCTG CTTCATTATA GAAGAATCAC TGCTGGCTTC 540  
CTCGGCTAGG CGGTAGCCGT CCTTCTCTGC GGCTGCATTC TGGCCACAGT CAGTTTCTTC 600  
TGGGAGGAGA GCTTGAGCCA GCACGTGGCT GGACTCCTGT TCCTCATGAC AGGGATATT 660  
TGACCACTTT CCTCTGTAC TTATGCCGCC AGTATCTCGT ATGATTGAA CCGGCTCCCA 720  
AAGCTAATTT ATAGCTTGGC TGCTGATGTG GAACATGGTT ACAGCTGGTC CATCTTTTGC 780  
GCCTGGTGCA GTTTAGGCTT TATTGTGGCA GCTGGAGGTC TCTGCATCGC TTATCCGTTT 840  
ATTAGCCGGA CCAAGATTGC ACAGCTAAAG TCTGGCAGAG ACTCCACGGT ATGA

## SEQ ID NO:220 PBF1 Protein sequence:

Protein Accession #: none found

1 11 21 31 41 51  
MEPRALVTAL SLGLSLCSLG LLVTAIFTDH WYETDPRRHK ESCERSRAGA DPPDQKRLM 60  
PLSHLEPLRDS PPLGRRLLPF GEGRADPESW RSLGLGLGLD AECGRPLPAT YSGLWRKCYF 120  
LGLDRDIDTL ILKRTAGRCT AIKYHFSQPI RLRLNIPNLT RTIQDEWHL LHLRLITAGF 180  
LGMHVAVLIC GCIVATVSFF WEESLTQHVA GLLPLMTGIF CTISLCTYAA SISYDLNRLP 240  
RLIYSLPADV EHGYSWSIFC AWCSLGFIVA AGGLCIAYPF ISRTKIAQLK SGRDSTV

## SEQ ID NO:221 PC4 DNA SEQUENCE

Nucleic Acid Accession #: NM\_016570

Coding sequence: 1-1134 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
ATGAGCGGAC TGAATCGGAA AAAAAGTTTA AGTTTGGTAA AAGAGTTGGA TGCTTTTCCG 60  
AAGGTTTCTG AGAGCTATGT AGAGACTTCA GCCAGTGGAG GTACAGTTTC TCTAATAGCA 120  
TTTACAACCTA TGGCTTTATT AACCATAATG GAATCTCTAG TATATCAAGA TACATGGATG 180  
AAGTATGAAT ACGAAGTAGA CAAGGATTTT TCTAGCAAAAT TAAGAATTAAT TAGATATATT 240  
ACTGTGTGCA TGRAGTGTCA ATATGTTGGA GCGGATGTAT TGGATTAGC AGAACAATG 300  
GTGTGACTCG CAGATGGTGT AGTTTATGAA CCAACAGTAT TTGATCTTTC ACCACAGCAG 360  
AAAGAGTGGC AGAGGATGCT GCAGCTGATT CAGAGTAGGC TACAAGAAGA GCATTCACCT 420  
CAAGATGTGA TATTTAAAG TGCTTTTAAA AGTACATCAA CAGCTCTTCC ACCAAGAGAA 480  
GATGATTCAAT CACAGTCTCC AAATGCATGC AGAATTCATG GCCATCTATA TGTCAATAAA 540  
GTAGCAGGGA ATTTTCACAT AACAGTGGGC AAGGCAATTC CACATCTCTG TGCTCATGCA 600  
CATTTGGCAG CACTTGCAC CAATGAATCT TACAATTTT CTCTAGAAAT AGATCATTTC 660  
TCTTTTGGAG AGCTTGTTC AGCAATTAAT AATCTTTAG ATGGAAGTGA AAAAATGCT 720  
ATAGATCACA ACCAGATGTT CCAATATTTT ATTACAGTTG TGCCAACAAA ACTACATACA 780  
TATAAATAT CAGCAGACAC CCATCAGTTT TCTGTGACAG AAAGGGAACG TATCATTAAC 840  
CATGCTCGAG GCAGCCATGG AGTCTCTGGG ATATTATGA AATATGATCT CAGTCTCTT 900  
ATGGTGTGAG TACTTGAGGA GCACATGCCA TTCTGGCAGT TTTTGTGAAG ACTCTGTGGT 960  
ATTGTGTGAG GAATCTTTTC AACCAACAGC ATGTACATG GAATTGGAAA ATTTATAGTT 1020  
GAAATATTT GCTGTGCTTT CAGACTTGGG TCCTATAAAC CTGTCAATTC TGTTCTCTTT 1080  
GAGGATGGCC ACACAGACAA CCACCTACCT CTTTATAGAAA ATAATACACA TTGA

## SEQ ID NO:222 PC14 Protein sequence:

Protein Accession #: NP\_057654

1 11 21 31 41 51  
MRRLNRKRTL SLVKELDAFP KVPESYVETS ASGGTVSLIA FTTHALLTIM EFSVYQDTWM 60  
KYEYEVDRDF SSKLRINIDI TVAMKCOYVG ADVLDLAETM VASADGLVYE PTVPDLSPQO 120  
KEWQRLQLI QSRLEQESL QDVIFKSAFK STSTALPRE DDSSQSPNAC RIHGHLYVNK 180  
VAGNFHITVG KAIFHPRGHA HLAALVNHEE YNFSHRIDHL SPGELVPAII NPLDGTAKIA 240  
IDHNQMFQYF ITVVPKLTHT YKISADTHQF SVTERERLIN HAAGSRGVSG IFMKYDLSSL 300  
MVTVTTEHMP FWQFPVRLCG IVGGIFSTTG MLHGIGKFTV EIIICRFRIG SYKPVNSVFP 360  
EDGHTDNHLP LLENNTHT

## SEQ ID NO:223 PEZ3 DNA SEQUENCE

Nucleic Acid Accession #: NM\_001935.1

Coding sequence: 76-2301 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
CGCGCGCTCT CGCGCGCCGC GTGACTTCTG CCTGCGCTCC TTCTCTGAAC GCTCACTTCC 60  
GAGGAGACGC CGACCATGAA GACACCGTGG AAGATTCTTC TGGGACTGCT GGGTGTCTGT 120  
CGCTTGTGCA CCATCATCAC CGTGCCCGTG GTTCTGCTGA ACAAGGCAC AGATGATGCT 180  
ACAGCTGACA GTCCGAAAC TTACACTCTA ACTGATTACT TAAAAATAC TTATAGACTG 240  
AAGTTAATCT CCTTAAGATG GATTTACAGT CATGAATATC TCTACAAACA AGAAATAAT 300

	ATCTTGGTAT	TCAATGCTGA	ATATGGAAAC	AGCTCAGTTT	TCTTGGAGAA	CAGTACATTT	360
	GATGAGTTTG	GACATCTCTAT	CAATGATTAT	TCAATATCTC	CTGATGGGCA	GTTTATCTCT	420
	TTAGAAACAA	ACTACGTGAA	GCAATGGAGG	CATTCTTACA	CAGCTTCATA	TGACATTTAT	480
	GATTTAATA	AAAGGCAGCT	GATTACAGAA	GAGAGGATTC	CAAAACACAC	ACAGTGGGTC	540
5	ACATGGTCAC	CAGTGGGTCA	TAAATGGCA	TATGTTTGG	ACAATGACAT	TTATGTTAAA	600
	ATTGAACCAA	ATTTACCAAG	TTACAGAATC	ACATGGACGG	GGAAAGAAGA	TATAATATAT	660
	AATGAACCAA	CTGACTGGGT	TTATGAAGAG	GAAGTCTTCA	GTGCCTACTC	TGCTCTGTGG	720
	TGGTCTCCAA	ACGGCACTTT	TTTAGCATAT	GCCCAATTTA	ACGACACAGA	AGTCCCACTT	780
	ATTGAATACT	CCTTCTACTC	TGATGAGTCA	CTGCAGTACC	CAAGAGACTG	ACGGGTCCCA	840
10	TATCCAAAGG	CAGGAGCTGT	GAATCCAAC	GTAAAGTTCT	TTGTTGTAAA	TACAGACTCT	900
	CTCAGCTCAG	TCACCAATGC	AACTTCCATA	CAATCACTG	CTCCTGCTTC	TATGTTGATA	960
	GGGATCACT	ACTTGTGTGA	TGTGACATGG	GCAACACAAG	AAAGAATTTC	TTTGCAGTGG	1020
	CTCAGGAGGA	TTACAGAACTA	TTCCGTCATG	GATATTTTGT	ACTATGATGA	ATCCAGTGG	1080
	AGATGGAAGT	GCTTAGTGGC	ACGGCAACAC	ATTGAATGA	GTACTACTGT	CTGGGTGGGA	1140
15	AGATTATGGC	CTTCAGAACC	TCATTTTACC	CTTGATGGTA	ATAGCTTCTA	CAAGATCATC	1200
	AGCAATGAAG	AAGGTTACAG	ACACATTTCG	TATTTCCAAA	TAGATAAAAA	AGACTGCACA	1260
	TTTATTACAA	AAGGCACCTG	GGAAGTCATC	GGGATAGAAG	CTCTAACCCG	TGATTTATCTA	1320
	TACTACATTA	GTAAATGAATA	TAAAGGAATG	CCAGGAGGAA	GGAAATCTTTA	TAAATCCCAA	1380
	CTTATTGACT	ATACAAAGAT	GACATGCCCT	AGTGTGAGC	TGAATCCCGA	AAGGTGTCTAG	1440
20	TACTATTCTG	TGTCATCTAG	TAAAGAGGCG	AAGTATTATC	AGCTGAGATG	TTCGGTCTCT	1500
	GGTCTGCCCC	TCTTACTCT	ACACAGCAGC	GTGAATGATA	AAGGGCTGAG	AGTCTGGGAA	1560
	GACAATTCAG	CTTTGGGATA	AATGCTGCAG	AATGTCCAGA	TGCCCTCCAA	AAAAGTGGAC	1620
	TTCAATTATT	TGAATGAAAC	AAAAATTTGG	TATCAGATGA	TCTTGCTCTC	TCATTTTGAT	1680
	AAATCCAAAG	AATATCTCT	ACTATTAGAT	GTGTATGCAG	GCCCATGTAG	TCAAAAGCA	1740
25	GACACTGTCT	TCAGACTGAA	CTGGGCCACT	TACCTTGCAA	GCACAGAAAA	CATTATAGTA	1800
	GCTAGCTTTG	ATGGCAGAGG	AAGTGGTTAC	CAAGGAGATA	AGATCATGCA	TGCAATCAAC	1860
	AGAGACTGCG	GAACATTTGA	AGTTGAAGAT	CAATTTGAAG	CAGCCAGACA	ATTTTCAAAA	1920
	ATGGGATTGG	TGGACAACAA	ACGAATTCGA	ATTTGGGGCT	GGTCAATATG	AGGGTACGTA	1980
	ACCTCAATGG	TCCTGGGATC	GGGAAGTGGC	GTGTTCAAGT	GTGGAAATAG	CGTGGCGCCT	2040
30	GTATCCCGGT	GGGAGTACTA	TGACTCAGTG	TACACAGAAC	GTTACATGGG	TCTCCCAACT	2100
	CCAGAAAGCA	ACCTTGACCA	TTACAGAAAT	TCAACAGTCA	TGAGCAGAGC	TGAAAATTTT	2160
	AAACAAGCTG	ATGACTCTCT	TATTCATGGA	ACAGCAGATG	ATAACOTTCA	CTTTCAGCAG	2220
	TCAGCTCAGA	TCTCCAAAGC	CCTGGTCCGAT	GTGAGGATGG	ATTTCCAGGC	AATGTGGTAT	2280
	ACTGATGAAG	ACCATGGAAT	AGCTAGCAGC	ACAGCACACC	AACATATATA	TACCCACATG	2340
35	AGCCACTTCA	TAAACAATG	TTTCTCTTTA	CCTTAGCAC	TCAAAATACC	ATGCCATTTA	2400
	AAGCTTTTAA	AAACTCATTT	TTGTTTTCAT	TATCTCAAAA	CTGCATCTGC	AAGATGATGA	2460
	TGATCTTTAA	AATACACACT	CAATCAAGA	AACTTAAGGT	TACCTTTGTT	CCCAAAATTC	2520
	ATACCTTTAA	TCTTAAGTAG	GGACTTCTGT	CTTCAACA	GATTTATACC	TTACAGAAAT	2580
40	TGGAATTATC	GGTCCGGGTT	TTATTGTTTA	AAATCATTTT	TGCATCAGCT	GCTGAAACAA	2640
	CAATAGGAA	TTGTTTTTAT	GGAGGCTTTG	CATAGATTCC	CTGAGCAGGA	TTTTAATCTT	2700
	TTTCTAAGCT	GACTGGTTCA	AATGTTGTTT	TCTTCTTTAA	AGGGATGGCA	AGATGTGGGC	2760
	AGTGATGTC	ATGAGGATG	GACAGGATAA	GAGGGATTAG	GGAGAGAAGA	TAGCAGGGCA	2820
	TGGCTGGGAA	CCCAAGTCCA	AGCATACCAA	CACGAGCAGG	CTACTGTGAC	CTCCCTCGG	2880
45	AGAGAGCTG	TTACCCACGA	GACTGGCACA	GTTTCTGAG	AAAGACTATT	CAAAACAGTCT	2940
	CAGGAAATCA	AATATCGAAA	CCACTGACTT	CTAAGTAAAC	CACAGCAGTT	GAAAGACTCC	3000
	AAAGAAATGT	AAGGGAACCT	GCCAGCAACG	CAGCCCCCAG	GTGCCAGTTA	TGGCTATAGG	3060
	TGCTACAAAA	ACACAGCAAG	GGTGATGGGA	AAGCATTTGA	AATGTGCTTT	TAAAAAATAA	3120
	TACTGATGTT	CCTAGTGAAA	GAGGCAGCTT	GAAACTGAGA	TGTGAACACA	TCAGCTTGCC	3180
50	CTGTTAAAG	ATGAAAATAT	TTGTATCACA	AACTTTAACT	TGAAGGAGTC	CTTGCAATCA	3240
	TTTTTCTTAT	TTCAATCTCT	TGAGTGTCTT	AAATAAAGAA	ATATTTTAA	TTCTTTGGAC	3300
	TCATTTTAA	AAATGGAAAC	TAAATACAA	TGTTATGTAT	TATTTATCCC	ATCTACATA	3360
	CTATGGAAAT	TCTCCAGTCT	ATTTAATAAA	TGTGCCCTCA	TTTTTTTC		

55 SEQ ID NO: 224 PEZ3 Protein sequence:  
Protein Accession #: NP\_001928.1

	1	11	21	31	41	51	
60	MKTPFKILLG	LLGAAALVTI	ITVPVVLINL	GTDDATADSR	KTYTLTDYLK	NTYRLKLYSL	60
	RWISDHEYL	KQENNILVFN	AEYGNSSVFL	ENSTFDEFPH	SINDYSISPD	GQFILLEYN	120
	VKQMRHSYTA	SYDIYDLNKR	QLITEERIFN	NTQVWTFSPV	GKILAYVWNN	DIYVKLEPNL	180
	PSYRIITWIK	EDIIYNGITD	WVYEEVPSA	YSALWMSFNG	TFLAYAQFND	TEVPLIEYSF	240
65	YSDLSLQYFK	TVKVPYFKAG	AVNPTVKFFV	VNIDSLSSVT	NATSIQITAP	ASMLIGDRYL	300
	CDVTWATQER	ISLQWLRRIT	NYSVMDICDY	DESSGRMNCL	VARQHIEMST	TGWSGRFRPS	360
	EPHFTLDGNS	PYKLIISNEB	YRHICVFQID	KKDCFTITKG	TWEVIGIEAL	TSYLYYISN	420
	EYKMPGGGRN	LVKIQLLDYT	KVTCLSCELN	PERCQYYSVS	FSKEAKYQQL	RCSGPGPLPLY	480
	TLSSVNDKGG	LRVLEDNSAL	DKMLQNVQMP	SKKLDFFILN	ETKFWYQMLL	PPHFDKSKKY	540
70	PLLLDVVYAGP	CSQKADTVFR	LAWATYLAST	ENLIVASFDD	RSGGYQGDRI	MHAINRRLGT	600
	FEVEDQIEAA	RQFSKMGFVD	NKRIAINGWS	YGGYVTSMLV	SGSGGVFKCG	IAPAIVSRWE	660
	YDVSYPTEYR	MGLPTPEDNL	DHYRNSTVMS	RAENFKQVEY	LLIHGTADDN	VHFQQAQIS	720
	KALVDVGVDF	QAMWYTDDEB	GLASSTARQH	ITYHMSHFIR	QCFSLP		

75 SEQ ID NO: 225 PBJ2 DNA SEQUENCE  
Nucleic Acid Accession #: none found  
Coding sequence: 1-261 (underlined sequences correspond to start and stop codons)

80	1	11	21	31	41	51



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ATGGCTCTGG CGAAGGTGAG GGAGCCAAAC GCAATGACA ATGCCATCAG AGTTGACAAC 60  
 AGAAGTGTGA TTAAAGTGGG TGCTAACCAG TGTCCCTGTC ATGAGGCAGA AAGTGAATCC 120  
 AGAAACCCCTC AGGAGCTCTG GATGGGCTTG CTCTCTTGA TGGGGTCTCT AGAAGCATGT 180  
 GTGGAATGA GGCCTCTGTC AGTCTGTGTC CTGAGAGATG ACAAGGAGCA GAGCCCCAC 240  
 CAGCCACAC TGGATGTCTA A

SEQ ID NO:226 PB2 Protein sequence:

Protein Accession #: none found

1 11 21 31 41 51  
 MALAKVREPN ANDNAIRVDN RSVIKVRANQ CSLHEAESES RNPQLWMGL LLLMGVLEAC 60  
 VEMRPLSVWS LRDDKEQSPH QPTLDV

SEQ ID NO:227 PB2 DNA SEQUENCE

Nucleic Acid Accession #: none found  
 Coding sequence: 1-462 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
 ATGCCAAATG CTGAGTTAGA AGCAAAGAGC CTTGGAAGCA GTAAATGTTT AAAAAGTCT 60  
 CTCATCTCTG CTGTATGTTG TGGATCAGCA AATATAGTCA GCCCTCTACT TGAGCAAAAT 120  
 ATTGATGTAT CTCTCAAGA TCTGGACAGA CGGCCAGAGA GTATGCTGTT TCTAGTCATC 180  
 ATCATGTGGA CCAGTTTGTG GGAAGACAAT CTTTCCATGG GCTGGGGGAA GCTAGAAGAT 240  
 TTTATGGCTA TTGAAGAAGA AATGAAGAAG CACGGAAGTA CTCATGTGGC ATTCCAGAA 300  
 AACCTGACTA ATGGTGCCGC TGCTGGCAAT GGTGATGATG GATTAATCC TCCAGGAAG 360  
 AGCAGAACAC CTGAAGCCA GCATTTCTCT GACACTGAGA ATGAAGAGTA TCACAGGTTT 420  
 GTCAAGATC AGATAGTTGT AGATATGCGG CGTTATTCT GA

SEQ ID NO:228 PB2 Protein sequence:

Protein Accession #: none found

1 11 21 31 41 51  
 MENAELEAKS LGSSKCLKTA LILAVCCGSA NIVSPLLEQN IDVSSQDLDR RPESMLPLVI 60  
 DMFTSPVEDN LSKGWGKLED FMALEEEMKK HGSTHVGPPE NLINGAAAGN GDDGLIPPRK 120  
 SRIFESQQFP DTENEYHRF VKDQIVVDMR RYF

SEQ ID NO:229 PE2 DNA SEQUENCE

Nucleic Acid Accession #: NM\_014253  
 Coding sequence: 65-8242 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
 GACTGCTTGC ATTAAGGAC TTCTCATCC TTTTTCAT GAAACTGAGC TTGCTTAATC 60  
 AGACATGGAG CAAACTGACT GCAAAACCTA CCAGCCTCTA CCAAAAGTCA AGCATGAAAT 120  
 GGAATCTAGT TACACAGTT CTCTGTATGA GAGTGAAGT GGAAGAAAAC CAGACAGTCC 180  
 ATACACTCTC AGGAGAGCCC TGCACGAGTA TAACCAGGAG CTGAGGATGA ATTACAATAG 240  
 CCAGATAGTA AAGAGGAAG AAGTAGAAAA ATCTACTCAA GAGATGGAAT TCTGTGAAC 300  
 CTCTACACTC CTGTGCTCTG GCTACCAAAC AGACATGCAC AGCGTTTCTC GGCATGGCTA 360  
 CCAGCTAGAG ATGGGATCTG ATGTGGACAC AGAGACAGAA GGTGCTGCCT CACCTGACCA 420  
 TGCCTAAGA ATGTGGATAA GGGGAATGAA ATCAGAGCAT AGTCTCTGTT TGTCCAGCCG 480  
 GGCCAACCTC GCATATCTCT TGACTGACAC TGACCATGAA AGGAAGTCTG ATGGGAAAAA 540  
 TGGTTTCAAA TTCTCTCTCT TTTGTGTGTA CATGGAGGCT CAGCTGGGT CACTCAAGA 600  
 TGTGCAGAGC AGCCACACA ACCAGTTTAC CTTACAGACC CTCCCACCGC CACCTCCGCC 660  
 TCCTCATGCC TGCACTGTG CCAGGAAGCC AOCCTTGCA GCGGACTCTC TTCAGAGGAG 720  
 ATCAATGACT ACCCGACACC AGCCAGCCC AGCTGTCCA GCTCCCCCAA CCAGCACGCA 780  
 GGAATCAGTC CATCTGCATA ACAGCTGGGT CTTGAACAGC AACATACCAT TGGAGACCAG 840  
 GCATTCCTCT TTCAACATG GATCTGTTTC CTCTCCGATC TTCAAGTCCAG CAGTCAAGAA 900  
 CTACCTCTCT ACATCCAATA CCGTGTACTC GCCCCCTCCC AGGCTCTTTC CTGGAAGCAC 960  
 CTTTCCCGCA CCTGCTTTTA CCTTTAACA ACCTTACAGG TGTGCAACT GGAAGTGCAC 1020  
 AGCATTTGAG GCCACTGCAA TCACAGTGAC TTTGGCCTTG TTAAGTACCT ATGTGATTGC 1080  
 AGTGCATTTG TTCGGCTGTA CTTGGCAGTT GCAACCAAGT GAAGGAGAGC TGTATGCAAA 1140  
 TGGAGTTAGC AAAGGGAACA GGGGGACCGA GTCCATGGAC ACTACTTACT CTCCAATTGG 1200  
 AGGAAAAGTT TCTGATAAAT CAGAGAAAAA AGTGTTTTCA GAGGACGGG CGATAGACAC 1260  
 TGGAGAGATT GACATTTGGT CACAGGTCAT GCAGACCAAT CCAGCTGGTT TATTCTGGCG 1320  
 TTTCAAGATT ACTATCCACC ATCCAATATA TCTGAAGTTC AATATTCTTT TAGCCAAGGA 1380  
 CTCTCTGCTG GGAATTTATG GCAGAAGAAA CATTCACCT ACACATACTC AGTTTGTATT 1440  
 TGTAAACTTA ATGGATGGCA AACAGCTGGT CAAGCAGGAC TCCAAGGGCT CTGATGATAC 1500  
 ACAGCATCTC CTGCGAACC TGATCTTAAC TTGCTTTCAG GAGACAGGTT TCATAGAGTA 1560  
 TATGGATCAA GGACCTTCCT ATCTGGCGTT TTACAATGAT GGAAGAAAGA TGGAGCAAGT 1620  
 ATTCTGTGTA ACTACAGCAA TTGAAATAAT GGATGACTGT TCAACCAATT GCAATGGAAA 1680  
 TGGAGAGTGT ATCTCTGGCC ATTGTCAATT TTTCCAGGTA TTCTTGGAC CTGACTGTGC 1740  
 TAGAATTTCC TGCCCTGTGC TGTGTGTGAG GAATGGAGAA TACGAGAAAG GACACTGTGT 1800  
 CTGCCGGCAT GGCTGGGAAG GGCCAGAGTG TGACGTTCCG GAAGAACAAT GCATTGATCC 1860  
 AACATGCTTT GGCCACGGCA CCTGCATCAT GGGAGTCTGC ATCTGTGTGC CAGGATACAA 1920

	AGGAGAAATA	TGCGAGGAAG	AGGACTGCCT	AGACCCAAATG	TGTTCCAACC	ATGGCATCTG	1980
	TGTAAAAGGA	GAATGTCACT	GTTCCTACTGG	CTGGGGAGGA	GTTAACTGTG	AAACACCACT	2040
	TCCTGTATGT	CAAGAGCAGT	GCTCAGGACA	CGGAACITTT	CTTCTGGACG	CTGGAGTATG	2100
5	CAGCTGTGAT	CCCAAGTGA	CAGGATCTGA	CTGCTCAACA	GAGCTGTGTA	CCATGGAGTG	2160
	TGCTAGCCAT	GGAGTCTGCT	CAAGAGGAAT	TTGCCAGTGT	GAAGAAGGCT	GGGTAGGACC	2220
	AACATGTGAG	GAACGCTCCT	GTCAATTCTCA	TTGTACTGAG	CATGGCCAAAT	GCAAGATGAG	2280
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EPHILAGAVN PTLGKCNISL PGEHNAVLE WRQKEQNKG NVSAFERRLR AHNRLSLID 1800
FDHTRTKGI YDHRKFTLR ILYDQTRPI LWSPVSRYN VNTYSPSGL VTFIQRGTWN 1860
EKMEYDQSGK IISRTWADGK IWSYTYLEKS VMLLLHSQRR YIFEYDQSDC LLSVTMPMSV 1920
RHSLOQMLSV GYRYNIYTPP DSSTFIQDY SRDGRLLQTL HLTGRRVLY KYTKQARLSE 1980
VLYDTQVTL TYESSGVIK TIHLMHDFI CTIRYRQTP LIGRQIFRFS EELVNRAPD 2040
YSTNNPRVTS MQAVINETPL FIDLYRYVDV SGRTEQPGKF SVINYDLNQV ITTVMKHTK 2100
IFSANGQVIE VQYELKAIA YMTIYQDNV GRHGNMCIKV GVDANITRYF YEYDADGQLQ 2160
TVSYNDKTFQ RYSYDLNDI NLSHGKSAR LTPFLRYDLR RITRLGEIQY KMDGDFLRQ 2220
RGNDIFEYNS NGLLQKAYNK ASGWTQYYY DGLGRRVASK SSLGQHLQFF VDATANPIRV 2280
THLYNHTSSE ITSLYYDLQ HLAHELSSG EYTYVACDNT GTPLAVFSSR GOVKEILYT 2340
PYGDIYHDYI PDPQVIIGPH GGLYDFLTKL VHLGQRDYDV VAGRWTYAH HIWKLNLPL 2400
KPFNLISFEN NYFVGKIQDV AKYTTDIRSN LELPGFQLHN VLPFGPKPEL ENLELYELL 2460
RLQTKTQWD PGTILGICQ ELQKQLRNP SLDQLPMTFR YNDGRCLGG KQPRFAAVPS 2520
VFGKGIKFAI KDGIVTADII GVANEDSRRL AAILNNAHYL ENLHFTIEGR DTHYFIKLS 2580
LEEDIVLIGN TGGRRILENG VNVTVSQMTS LLNGRTRRFA DIQLQHGALC FNIRYGTIVE 2640
EENNVLEIA RQRAVQAQWT KEQRRLQEGE EGIRAWTEGE KQQLLSTGRV QGYDGYFVLS 2700
VEQYLELSDS ANNHPRQS BIGRR

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Nucleic Acid Accession #: NM\_000441

SEQ ID NO:231 PFD4 DNA SEQUENCE:

Coding sequence:

225-2567 (underlined sequences correspond to start and stop codons)

	1	11	21	31	41	51	
5	CTCAGCCTTC	COGGTTGGGG	AAAGGGGAAG	AATGCAGGAG	GGGTAGGATT	TCTTTCTCTGA	60
	TAGGATCGGT	TGGGAAAGAC	CGCAGCCTGT	GTGTGTCTTT	CCCTTCGACC	AAGGTGTCTG	120
	TTGCTCCGTA	AATAAAACGT	CCCACTGCCT	TCTGAGAGCG	CTATAAAGGC	AGCGGAAGGG	180
	TAGTCCGCGG	GGCATTCCGG	CGCGGGCGCG	AGCAGAGACA	GGTCATGGCA	GCGCCAGGCG	240
10	GCAGGTGCGA	GCCGCCGCGG	CTCCCGAGT	ACAGCTGCAG	CTACATGGTG	TGCGGGCGCG	300
	TCTACAGCGA	GCTGCTTTTC	CAGCAACAGC	ACGAGCGGCG	CCTGCAGGAG	CGCAAGACGC	360
	TGCGGGAGAG	CCTGGCCAAAG	TGCTGCAGTT	GTTCAGAA	GAGAGCCTTT	GGTGTGCTAA	420
	AGACTCTTGT	GCCCATCTTG	GAGTGGCTCC	CCAAATACCG	AGTCAAGGAA	TGGCTGCTTA	480
	GTGACGTCAT	TTGCGGAGTT	AGTACTGGGC	TAGTGGCCAC	GCTGCAAGGG	ATGGCATATG	540
15	CCCTACTAGC	TGCAGTTCCT	GTGCGATATG	GTCTCTACTC	TGCTTTTTC	CCTATCCTGA	600
	CATACTTTAT	CTTTGGAAACA	TCAAGACATA	TCTCAGTTGG	ACCTTTTCCA	GTGGTGAATT	660
	TAATGGTGGG	ATCTGTTGTT	CTGAGCATGG	CCCCGACGA	ACACTTTCTC	GTATCCAGCA	720
	GCAATGGAA	TGTATTAAAT	ACTACTATGA	TAGACACTGC	AGCTAGAGAT	ACAGCTAGAG	780
	TCCTGATTGC	CAGTGCCTCG	ACTCTGCTGG	TTGGAATTAT	ACAGTTGATA	TTTGGTGGCT	840
20	TGCAATAGTG	AGGTACTTGG	AGGTACTTGG	CAGATCTTTT	GGTGGTGGC	TTCAACAACAG	900
	CTGCTGCTTT	CCAAAGTCTG	GTCTCAGCAG	TAAAGATTGT	CCTCAATGTT	TCAACCAAAA	960
	ACTCAATGCT	AGTCTCTCTC	ATTATCTATA	CGCTGGTTGA	GATTTTTCAA	AATATTGGTG	1020
	ATACCAATCT	TGCTGATTTC	ACTGCTGGAT	TGCTCACCAT	TGCTGCTGTT	ATGGCAGTTA	1080
	AGGAATTA	TGATCGGTTT	AGACACAATA	TCCAGTCCC	TATTCCTATA	GAAGTAATTG	1140
25	TGACGATAAT	TGCTACTGCC	ATTTCAATATG	GAGCCAACTT	GGAAAAAAT	TACAATGCTG	1200
	GCAATGTTAA	ATCCATCCCA	AGGGGGTTT	TGCTCTCTGA	ACTTCCACCT	GTGAGCTTGT	1260
	TCTCGGAGAT	CTTGGCTGCA	TCAATTTTCCA	TGCTGTGCTG	GGCTTATGCT	ATGCAAGTGT	1320
	CAGTAGGAAA	AGTATATGCC	ACCAAGTATG	ATTACACCAT	CGATGGGAAC	CAGGAATTCA	1380
	TTGCTTTTGG	GATCAGCAAC	ATCTTCTCAG	GATCTTCTC	TTGTTTGTG	GCCACCACTG	1440
30	CTCTTTCCCG	CACGGCCGTC	CAGGAGAGCA	CTGAGAGAAA	GACACAGGTT	GCTGCGATCA	1500
	TCTCTGCTGC	GATTGTGATG	ATCGCCATTC	TTGCGCTGGG	GAAGCTTCTG	GAACCCCTGC	1560
	AGAACTGGGT	CTTGGCAGCT	GTGTAAATG	CCAACCTGAA	AGGGATGTTT	ATGCAGCTGT	1620
	GTGACATTCC	TCGCTCTGGG	AGACAGATA	AGATTGATGC	TGTTATCTGG	GTGTTTACGT	1680
	GTATAGTGT	GATCATCTCG	GGGCTGGATC	TGCGTTTACT	AGCTGGCCCT	ATATTGGGAC	1740
35	TGTTGACTGT	GGTCTGAGA	GTTCAGTTTC	CTTCTTGAAA	TGGCCTTGGA	AGCATCCCTA	1800
	GCACAGATAT	CTACAAGAAT	ACCAAGAATT	ACAAAAACAT	TGAAGAACCT	CAAGGAGTGA	1860
	AGATTCTTAG	ATTTTCCAGT	CCTATTTTCT	ATGGCAATGT	CGATGGTTTT	AAAAAATGTA	1920
	TCAAGTCCAC	AGTTGGATTT	GATGCCATTAT	GAGTATATA	TAAGAGGCTG	AAAGCGCTGA	1980
	GGAAATATAC	GAAATATAA	AAAAGTGGAC	AATTAAAGAC	AACAAGAANT	GGCATCATAA	2040
40	GTGATGCTGT	TTCAACAAAT	AATGCTTTTG	AGCCTGATGA	GGATATTGAA	GATCTGGAGG	2100
	AACTTATAT	CCCAACCAAG	GAAATAGAGA	TTCAAGTGA	TTGGAACCTC	GAGCTTCCAG	2160
	TCAAAGTGAA	CGTTCCCAAA	GTGCCAATCC	ATAGCCTTGT	GCTTGACGTT	GGAGCTATAT	2220
	CTTTCCTGGA	CGTTGTTGGA	GTGAGATCAC	TGCGGTGAT	TGTCAAGAA	TTCCAAAGAA	2280
45	TTGATGTGAA	TGTGATTTT	GCATCACTTC	AAGATTATGT	GATAGAAAA	CTGGAGCAAT	2340
	GGGGTCTCT	TGACGACAA	ATTAGAAAGG	ACACATCTTT	TTTGACGGTG	CATGATGCTA	2400
	TACTCTATCT	ACAGAACCAG	GTGAAATCTC	AAGAGGGTCA	AGGTTCCATT	TTAGAAACGA	2460
	TCACTCTATCT	TCAGGATGTT	AAGATATCCC	TTGAATTAAT	AGAAACAGAG	CTGACGGAAG	2520
	AAGAATCTGA	TGTCACAGAT	GAGGCTATGC	GTACACTTGC	ATCCTGAAG	TGGGTTGGG	2580
50	AGGTCTCTAT	GAGCAAGGAA	TACAAGACAA	AACCTTCTCA	ATGCAATTGAC	TATTTCTTCA	2640
	GACTCAAAAC	ACTCATCTTT	TTTTCTATTA	AGCCATTGAA	AGAGAGCAC	TAAGACTGCT	2700
	TCTAGGCTCT	ATTTATATAA	TAAACACCTT	ATCCCTAACA	TGGGCAAAAT	GGCTAGAAAT	2760
	ATTACAGACA	TTTGGCAGCG	TCCAGGGTAA	GCTGGTGTTA	TAATACGCTG	CTGATCTACA	2820
	TCACAGATTT	GCTAATAATG	TTCAAGTGGG	CCCTGGCATA	TCTCTGTICA	GTTAGAGTGA	2880
	GTGCTGACCC	AACAGCCTCT	GTGGTCAAGC	GAGTCAAGAA	TGATTAAATCA	TAAAGAAAA	2940
55	TCAGTTTTCG	ACTGACCTGG	ATATCCATGA	GCTGCACATG	TCACCAATGA	AGGTCACTTT	3000
	TAGTAAATGC	TGAAATAAAA	TGATTAAATG	ATTTATCAAT	AAAAGCCTTT	GAAATACTTT	3060
	TGGATAATAA	ATTGGAGTTT	TAAAAATGCA	AATTTGCTTA	GTATCTAATA	ATGAAGTGT	3120
	ATTACATATA	GCCGGAATTG	AGGATCTCTT	TGATCCTGGA	AATGGTTTAC	CTAAAAAGTA	3180
	CAGAACCAAG	CCAATATATT	TTGAAATATT	GATGCAGACA	AATGAAATTA	TAAAGAGATT	3240
60	TTCAATGTTT	ATAAAATCTC	TTTTTGATAT	GATAATAATC	ATGATCACA	CTGAGATCAA	3300
	AAAAATATAT	GACAGATTAT	TTTGTTTAAA	AATGCAGTTT	TAATATCTTT	AGTCTATAGA	3360
	AATGATCAAT	GCAATGAGGC	ATGTATAGGT	ATGATCTGTG	TAAATCTGTA	CATAAAAAAC	3420
	GTGCTATCTC	GAGTGAAAA	TTTTTTGATG	TGCTTACATA	ACCATGGTGA	TTAAATAGAG	3480
	TTTATATTTT	TTCTCAAAAA	TTTTAGCAGT	GTGTAAAGTA	AGTAATCTTT	AACTGAACCT	3540
65	TGACCACTTA	AAAAAAATC	TAAAAATTGA	ACTACCTATA	GTAGTCTGTG	TTTAAAGTGA	3600
	ATTTTTTAAG	ACAAAGCATT	CTAAATGAAC	TCAATATAAA	AACATTCATT	TGGAATGTAC	3660
	ATACTGA	ATACAGGTTT	TTTTGACCAA	AAGTTTTTAT	ATCTTTTCTT	TTTATTTATT	3720
	TTTTTCTTAA	GTGCCAACAA	TTTTCTAGAT	ATTATATACA	ACACAGGCTT	TGATCTTGGG	3780
	GACTTTTCCC	ATATATTCTA	CAGTGGAGTG	AATGAAGTTG	TACTTCAATT	CTAGAGAAAA	3840
70	GTATATACCA	GGTCCCCAAT	TGAGAAATGC	TTGCTTGATT	GAAACGACA	TCATCCCTTG	3900
	GTATATCTCA	GGGATTTGGT	TCAGGACCCC	TGCAATTTAC	AAAATTTGTG	CACACTCAAG	3960
	TCCTGCAAGT	ACCCCTGCCT	AAAGATAGAA	TGGCTTCTCT	GTTTTCTTTC	TGAAATACAA	4020
	CCAGAAACAA	TGTGTCTATT	TCTGAAAGAA	TAGGATTAAT	GATCATACAA	ATGGGTTAAT	4080
	CCTGAATCTC	GGTGTGAAAT	CTGGTTACAG	CATAACTAGG	ATTATAATGC	TGCCCTCAATT	4140
75	TCACAGCACT	ACTTGTCTAT	ATTGACAACA	AATCATCTCG	CTAAAGAGTG	AATGTAGGCC	4200
	AGGCCGCGTG	GCTCATGCTT	GTAATCCAG	CACCTTGGGA	GGCCGAGGCG	GGTGGATCAC	4260
	GAGGTCAGGA	ATCCCTGGCTA	ACATGGTAAA	ACCCGCTCTC	TACTAAAAAT		4320
	AGAAAAAAGT	AAATTAGCCT	AGCGTGGTGG	CTGGCGGCGG	CCTGTAGTCC	CAGCTATTGT	4380
	CGAGGCTAAG	CGCGTGAACC	CGGAGGCGG	AGCTTGCAGT	GAGCCGAGGT		4440
80	CGTGCCACTG	CAGTCCAGCC	TGGGCGACAG	AGCAAGACTC	CGTCTCAAAA	AAAAA	4500

5  
10  
15  
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25  
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AAAAAAAAA AGAGTGAATG TAATAGTCTT GCAGAAAATG AATGAATACC TTTGTTCAAT 4560  
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GGCTAGAGTT TGTAAATTCCT GGGTTCATTT GTGATGACAT AAGTCAGCAA ACTGCGGGAA 4680  
TACTGTCTCT TCTATGTATT TTGTGAATAG TAAGCATAAAT TTTAGTTTGT TATTATCAAT 4740  
GAAAATTTC AATTGAAATTA AAGCTGCCCT TTGTTATATT TTTAACCTAT AGGATAAGAT 4800  
TCCAGTATTG TATATGAGTT TTAACAAATT AAAAAATCAA ATCATGTACA TTTGAAAATA 4860  
TTGCACACA TTTAAAAATA AATGTAAAGT TGTCTTTTAA ACTACTCGGA TGTGTCTCTT 4920  
CTGAACAAAA

SEQ ID NO:232 PFD4 Protein sequence:

Protein Accession #: O43511

1 11 21 31 41 51  
MAAPGGRSEF POLPEYSCSY MVSREPVSEF AFQOOHERRL QERKTLRESL AKCCSCSRKR 60  
APGVLRKLVF ILEWLPRYRV KEWLLSDVIS GVSTGLVATL QCMAYALLAA VPVGYGLYSA 120  
FFPILTYTIF GTSRHISVGP FVVVSLMVGS VVLSMAPDEH FLVSSSNGTV LNTTHIDTAA 180  
RDTARVLIAS ALTLVLGLIQ LIPGGLQIGF IVRYLADPLV GGPTTAAAPQ VLVSQKLKIVL 240  
NVSTKNYNV LSIIYTLVEI PQNIGDNLIA DFTAGLLTIV VCMVAVKELND RPRHKIPVPI 300  
PIEVITITIA TALSYGANLE KNYNAGIVKS IPRGFLPEL PPVSLPSEML AASFSLIAVVA 360  
YAIASVVGKV YAKKYDYIID GNQEFIAFGI SNIFSGFPSC FVATTALSRF AVQESTGGKT 420  
QVAGIISAAI VMIALALCK LLEPLQKSVL AAVVIANLKG HPMQLCDIPR LWRQNKIDAV 480  
IWFPTCIVSI ILGLDLGLLA GLIFGLLTVV LRVQFPSPWNG LGSIPSTDIY KSTKNYKNIE 540  
EPQGVKILRF SSPIFYGNVD GPKCKIKSTV GFDALRVYMK RLKALRKIQK LIKSGQLRAT 600  
KNGIISDAVS TNAPEPEDD IEDLEELDIP TKEIEIQVDW NSELVVKVNV PKVFIHSLVL 660  
DCGAIISFLDV VGVRSIRVIV KEFORIDVNV YFASLQDVVI EKLEQCGFFD DNIRKDTFFL 720  
TVHDAILYLV NQVKSQBSQG SILETTTLIQ DCKDTLELIE TELTSEELDV QDEAMRTLAS 780

SEQ ID NO:233 PFH2 DNA SEQUENCE:

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45  
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55  
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Nucleic Acid Accession #: NM\_016029  
Coding sequence: 228-1097 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
CTGCGATGCC GCAGGGCAGC GACGCGACTC TGGTGGGGGC CGTCTTCTTC CCCCCGAGCT 60  
GGGCGTGGCC GCGCCGAATG AACTGGGAGC TGCTGCTGTG GCTGCTGGTG CTGTGCGCGC 120  
TGCTCTGTCT CTGTGTGCGC CTGCTGCGCT TCCTGAGGGC TGACGGCGAC CTGACGCTAC 180  
TATGGGCCGA GTGGCAGGGA CGACGCCAG AATGGGAGCT GACTGATATG GTGGTGTGGG 240  
TGACTGGAGC CTGAGTGGGA ATTGGTGAGG AGCTGGCTTA CCAGTTGTCT AACTAGGAG 300  
TTTCTCTTGT GCTGTACGCC AGAAGAGTGC ATGAGCTGGA AAGGGTGAAA AGAAGATGCC 360  
TAGAGAAATG CAATTAAAA GAAAAGATA TACTGTGTTT GCCCTTGAC CTGACCGACA 420  
CTGGTTCCCA TGAAGCGGCT ACCAAAGCTG TTCTCCAGGA GTTTGGTAGA ATCCACATTC 480  
TGGTCAACAA TGGTGGAAATG TCCAGCGTT CTCTGTGCAT GGATACCAGC TTGGATGTCT 540  
ACAGAAAGCT AATAGAGCTT AACTACTTAG GGACGGTGTC CTTGACAAAA TGTGTTCTGC 600  
CTACATGAT CGAGAGGAAG CAAGGAAAGA TTGTACTGTT GAATAGCATC CTGGGTATCA 660  
TATCTGTACC TCTTCCATT GGATACTGTG CTAGCAAGCA TGCTCTCCGG GGTPTTTTAA 720  
ATGGCCTCG AACAGAATCT GCCACATACC CAGGTATAAT AGTTTCTAAC ATTGCCCCAG 780  
GACCTGTGCA ATCAAAATATT GTGGAGAAIT CCCTAGCTGG AGAAGTCACA AAGACTATAG 840  
GCAATAATGG AGACCAGTCC CACAAGATGA CAACCACTCG TTGTGTGGCG CTGATGTTAA 900  
TCAGCATGGC CAATGATTG AAGAAGATTG GGATCTCAGA ACAACCTTTC TTGTTAGTAA 960  
CATATTGTG GCAATACATG CCAACCTGGG CCTGGTGGAT AACCAACAAG ATGGGGGAAGA 1020  
AAAGGATTGA GAACTTTAAAG AGTGGTGTGG ATGCAGACTC TTCTTATTTT AAAATCTTTA 1080  
AGACAAACA TGACTGAAAA GAGCACTGTT ACTTTTCAAG CCACTGGAGG GAGAAATGGA 1140  
AAACATGAAA ACAGCAATCT TCTTATGCTT CTGAATAATC AAAGACTAAT TTGTGATTGT 1200  
ACTTTTAAAT AGATATGACT TTGCTTCCAA CATGGAATGA AATAAAAAAT AATAATAAAA 1260  
AGATTGCCAT GAATCTTGCA AA

SEQ ID NO:234 PFH2 Protein sequence:

Protein Accession #: NP\_057113

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75  
80

1 11 21 31 41 51  
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GIGELAYQL SKLGVSLVLS ARRVHELERY KRRCLNENGL KEKDILVLPL DLTDTGSHEA 120  
ATKAVLQEPG RIDILVNNGG MSQSLCHMDT SLDVYRKLIE LNYLSTVSLT KCVLPHEMER 180  
KQGVIVTVNS ILGISVPLS IGYCASKHAL RGFNGLRTE LATYPLIIVS NICPGPVQSN 240  
IVENSLAGEV TKTIGNGDQ SEKHITTSRCV RLMLISMAND LKEVWISQEP PLLVTTYLWQY 300  
HPTAWAWITN KMGKRIENF KSGVDADSSY FKIFKTKHD

SEQ ID NO:235 ACCS DNA SEQUENCE

Nucleic Acid Accession #: NM\_000450

Coding sequence: 1-1833 (underlined sequences correspond to start and stop codons)

1 11 21 31 41 51  
5 ATGATTGCTT CACAGTTTCT CTCAGCTCTC ACTTTGGTGC TTCTCATTTAA AGAGAGTGGG 60  
GCTTGGTCTT ACAACACCTC CACGGAAGCT ATGACTTTATG ATGAGGCCAG TGCTTTATGT 120  
CAGCAAGGAT ACACACACCT GGTTCGAATT CAAAACAAAG AAGAGATTGA GTACCTAAAC 180  
TCCATATTGA GCTATTTCACC AAGTTATTAC TGGATTGGAA TCAGAAAAGT CAACAATGTG 240  
10 TGGGTCTGGG TAGGAACCCA GAAACCTCTG ACAGAAGAAG CCAAGAACTG GGCTCCAGGT 300  
GAACCCACAA ATAGGCAAAA AGATGAGGAC TGGGTGGAGA TCTACATCAA GAGAGAAAAA 360  
GATGTGGGCA TGTGGAATGA TGAGAGGTGC AGCAAGAAGA AGCTTGCCCT ATGCTACACA 420  
GCTGCTGTGA CCAATACATC CTGCACTGGC CACGGTGAAT GTGTAGAGAC CATCAATAAT 480  
TACACTTGA AGTGTGACCC TGGCTTCAGT GGACTCAAGT GTGAGCAAT TGTGAAGTGT 540  
ACAGCCCTGG AATCCCTGGA GCATGGAAGC CTGGTTTGCA GTCAACCACT GGGAAACTTC 600  
15 AGCTACAAAT CTTCCTGCTC TATCAGCTGT GATAGGGGTT ACCTGCCAAG CAGCATGGAG 660  
AGCATGCAAT GTATGTCTCT TGGAGAAATG AGTGCTCTTA TTCCAGCCCT CAATGTGGTT 720  
GAGTGTGATG CTGTGACAAA TCCAGCCAAT GGGTTCGTGG AATGTTTCCA AAACCTTGGA 780  
AGCTTCCCAT GGAACACAAC CTGTACATTT GACTGTGAAG AAGGATTGGA ACTAATGGGA 840  
GCCCCAGAGC TTCACTGTAC CTCATCTGGG AATTTGGACA ACAGAGAGCC AACGTGTAAA 900  
20 GCTGTGACAT CAGGGGCCGT CCGCCAGCCT CAGAATGGCT CTGTGAGGTG CAGCCATTCG 960  
CTCTCTGGAG AGTTCACTCT CAAATCATCC TGCAACTTCA CCTGTGAGGA AGGCTTCATG 1020  
TTGACAGGAC CAGCCAGGTG TGAATGCACC ACTCAAGGGC AGTGGACACA GCAAAATCCCA 1080  
GTTTGTGAAG CTTCCTCAGT CACAGCCCTG TCCAAACCCG AGCGAGGCTA CATGAATTGT 1140  
25 CTTCCTAGTG CTTCCTGGCAG TTTCCGTTAT GGTTCAGCT GTGAGTCTCT CTGTGAGCAG 1200  
GGTTTGTGTG TGAAGGGATC CAAAAGGCTC CAATGTGGCC CCACAGGGGA GTTGGGACAC 1260  
GAGAAGCCCA CATGTGAAGC TGTGAGATGC GATGCTGTCC ACCAGCCCCC GAAGGGTTTG 1320  
GTGAGGTGTG CTCATTCCTC TATTGGAGAA TTCACCTACA AGTCTCTCTG TGCCTTCAGC 1380  
TGTGAGGAGG GATTGAATTT ATATGGATCA ACTCAACTTG AGTGACATCT TCAGGGGCAA 1440  
TGGACAGAG AGCTTCTCTC CTGCCAAGTG GTAAATGTTT CAAGCCTGGC AGTTCCGGGA 1500  
30 AAGATCAACA TGAGCTGCAG TGGGGAGCCC GTGTTTGCCA CTGTGTGCAA GTTCGCTGT 1560  
CCTGAAGGAT GGACGCTCAA TGGCTCTGCA GCTCGGACAT GTGGAGCCAC AGGACACTGG 1620  
TCTGGCCCTG TACTACCTCG TGAAGCTCCC ACTGAGTCCA ACATTCCCTT GGTAGCTGGA 1680  
CTTCTCTGCT CTGACTCTCT CCTCTGACA TTAGCACCAT TTCTCTCTGT GCTTCGGAAA 1740  
35 TGCTTACGGA AAGCAAGAAA ATTTGTTCCT GCCAGCAGCT GCCAAAGCCT TGAATCAGAC 1800  
GGAAGCTACC AAAAGCCTTC TTACATCCTT TAA

SEQ ID NO:236 ACC5 Protein sequence:

Protein Accession #: NP\_000441

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1 11 21 31 41 51  
45 MIAQFLSAL TLVLLIKESG ANSYNTSTEA MTYDEASAYC QORYTHLVAI QNKKEIEYLN 60  
SILSYSPSYW WIGIRKVNIV WWVGTQKPL TEEAKNWAPG EPNRQRQDED CVEIYIKREK 120  
DVGMMNDERC SKKKLALCTT AACTVNTSCG HGEVETIIM YTCKCDPGFS GLKCEQIVNC 180  
TALESPEHGS LVCSHPLGNF SYNSSCSISC DRGYLPSSME TMQCMSSGEW SAPIPACNVV 240  
50 ECDAVTNPAN GFVECPQNPQ SPPWNTCTP DCEBGFELMG AQLQCTSSG NMDNEKPTCK 300  
AVTCRAVRQP QNGSVRCSES PAGEPTFKSS CNFTCEBGFH LQGPQVQECT TQGWTTQOIP 360  
VCEAPCTAL NENPERGYMC LPSASGSFHY GSCEFSCEQ GFVLKGSKRL QCGPTGEMDN 420  
EKPTCEAVRC DAVEQPFKGL VRCAHSPIGE FTYKSSCAFS CEBGFELYGS TQLECTSQGQ 480  
WTEEVPSQCV VKCSSLAVPG KIMHSCSGEP VFGTVCKPAC PEGWTLNGSA ARTCGATGHW 540  
55 SGLLETCEAP TESNIPLVAG LSAAGLSLLT LAPFLNLRLK CLRAKRFVP ASSCQSLBES 600  
GSYQKPSYLL

SEQ ID NO:237 PM28 DNA SEQUENCE

Nucleic Acid Accession #: N51002

Coding sequence: 1-3793 (underlined sequences correspond to start and stop codons)

60  
1 11 21 31 41 51  
65 ATGATGTGTG AAGTGATGCC CACGATTAAT GAGGACACCC CAATGAGCCA AAGGGGGTCC 60  
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CAAAGACTTC AGGATGTCAAT CTATGACCGA GACTCACTCC AGAGACAGCT CAATTACAGC 240  
CTGCCACAGG ATATCGAATC CCTAACAGGA GGGCTGGCTG GTTCTAAGGG GGCTGATCCA 300  
CGGGAATTTG CTGCCTGAC AAAAGAATTA AATGCCTGCA GGGAACTACT TCTAGAAAG 360  
70 GAAGAAGAAA TCTCTGAATC TAAAGCTGAA AGAAACAACA CAAGACTATT ACTGGAGCAT 420  
TTGAGTGGCC TTGTGTACAG ACATGAAAGA TCACTAAGAA TGACGCTGTT AAAACGCAA 480  
GCCCCAGTCT CCTCAGGAGT ATCCAGTGAA GTTGAAGTTC TCAAGGCACT GAAATCTTTG 540  
TTTGAGCACC ACAAGGCCCT GGATGAAAG GTAAGGGAGC GACTGAGGGT TTCTTTAGAA 600  
AGAGTCTCTG CACTGGAAGA AGAACTAGCT GCTGCTAATC AGGAGATTGT TGCTTGGCT 660  
75 GAACAAAATG TTCAATATCA AAGAAAATG GCATCAAGCG AGGGATCCAC AGAGTCAGAA 720  
CATCTTGAAG GGATGGAACC TGGACAGAAA GTCCATGAGA AGCGTTTGTG CAATGTTTCT 780  
ATAGACTCAA CCGATGAAAC TAGTCAATA GTTGAAGTAC AAGAATTGCT TGAAAGCAA 840  
AACTATGAAA TGGCCACAGT GAAAGAACGT TTAGCAGCCC TTTCTTCCCG AGTGGGAGAG 900  
GTGGAACAGG AAGCAGAGAC AGCAAGAAAG GATCTCAITA AAACAGAGA AATGAACACC 960  
AAGTATCAAA GGGACATTAG GGAGGCCATG GCACAAAAGG AAGATATGGA AGAAAGAAAT 1020  
80 ACAACCCCTG AAAAGCGTTA CCTCAGTCTC CAGAGAGAAT CTACCTCCAT ACATGACATG 1080

5	AATGATAAAC	TAGAAAAATGA	GTTAGCAAAAT	AAAGAAGCTA	TCCTACGGCA	GATGGAAGAG	1140
	AAAAACAGAC	AGTTACAAGA	ACGTCCTTGAG	CTAGCTGAAC	AAAAGTTGCA	GCAGACCATG	1200
	AGAAAGGCTG	AAACCTTGCC	TGAAGTAGAG	GCTGAACCTG	CTCAGAGAAT	TGCAGCCCTA	1260
	ACCAAGGCTG	AAGAGAGACA	TGGAATATT	GAAGAACGTA	TGAGACATTT	AGAGGGCTCA	1320
	CTTGAAGAGA	AGAATCAAGA	ACTTCAAGA	GCTAGGCCAA	GAGAGAAAT	GAATGAGGAG	1380
10	CATAACAAGA	GATTATCGGA	TACGGTTGAT	AGACTTCTGA	CTGAATCCAA	TGAACGCCCTA	1440
	CAACTACACT	TAAAGGAAAG	AATGGCTGCT	CTAGAAGAAA	AGAAATGTTT	AAATCAAGAA	1500
	TCAGAAACTT	TCAGAAAGAA	TCTTGAAGAA	TCTTTACATG	ATAAGGAAAG	AATTAGCAGAA	1560
	GAAATTGAAA	AGCTGAGATC	TGAACCTGAC	CAATTGAAAA	TGAGAACTGG	CTCTTTAATT	1620
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15	TCCCTAGTGG	ACAGCCAGTC	TGATTACAGA	ACAACCTAAG	TAAATAAGAAG	ACCAAGGAGA	1740
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20	AACAAAGAAA	TCAGGGTAAT	TCAGGAAGAA	AAAGAACTTA	CAGAGTTGCG	TGCTGAAGAA	2040
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	GGTACTCTCA	TGACTGCCTC	TGTTACAGCT	TCATCGCTGG	CCAGTTTCATC	TCCCCCACTG	2160
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	GTCAATGAGC	TGCCAAGTGA	TCTGAGGAAA	CATCGGAGAA	AGATTGCACT	TGTGGAAGAA	2280
25	GATGTGAGAG	AGGACAAAGC	AACAATTAAA	TGTGAAACTT	CTCCTCTCTC	TACCCTTAGA	2340
	GGCCTCAGAA	TGACTCACAC	TCTCCCTTCT	TCCTACCACA	ATGATGCTCG	AAGTAGTTTA	2400
	TCTGTCTCTC	TTGAGCCAGA	AAGCCTCGGG	CTTGGTAGTG	CCAACAGCAG	CCAAGACTCT	2460
	CTTCAACAAG	CCCCAAGAA	GAAAGGAATC	AAGTCTTCAA	TAGGACGTTT	GTTTGGTAAA	2520
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30	GAGTCCCTGG	GTTTAGGCAA	ACTCGGAAGT	CAAGCTGAGA	AGGATCGAAG	ACTAAAGAAA	2640
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	TGCCAGGCCA	ACGTGAAGAG	TGGTGCCATC	ATGCTCTGCT	TATCTGACAC	TGAGATCCAG	2820
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35	ATGCTTTCCC	TACCAAGTCC	TTCAAGCTCT	CCAACATCTC	GAACTCCTTC	AGGCAACGTT	2940
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	GAAGGAAGCT	GGGCCCAATG	TCCGCTTTTT	CTACAGACCC	TGGCTTAGTG	AGATATGAAT	3060
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	TTAAAGAGGT	TGAATATATG	CAGAAAAGAA	GACGGGAAGC	AAGCCAACTA	AGGCAACAT	3300
	GAAATTAAGT	ACGTGTGTGT	GTGGAGCAAT	GACCGAATTA	TTGCTGGGAT	ACAAGCAATT	3360
	GGACTTCGAG	AATATCAAAA	TAATATACTT	GAGAGCGGTG	TGCAATGGCTC	ACTTATAGCC	3420
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45	ACCCAGGACA	GGCAGATTCT	TGAAGAGAAA	TACAAATACC	TCTTGGCCCT	GGGAAGTAAA	3540
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50 SEQ ID NO:238 PM28 Protein sequence:  
Protein Accession #: none found

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	EBEISELKAE	RNYTRILLLEH	LECLVSRHER	SLRMTVVVKRQ	AQSPSGVSSE	VEVLKALKSL	180
	FEHFKALDEK	VRELRVLSE	RVSALREBELA	AANQEIVALR	EQNVHIQRKM	ASSEGSTPSE	240
	HLEBMEPGQK	VHERLRSNGS	IDSTDETSQI	VELQELLEKQ	NYEMAQMKER	LAALSSRVGE	300
60	VEQEAETARK	DLIKTEEMNT	KYQRDIREAM	AQKEDMEERI	TTLEKRYLSA	QRESTDHDM	360
	NDKLENELAN	KEAILRQME	KNRQLQERLE	LAEQKLQOTM	RKAETLPEVE	AELAQRIAAL	420
	TKAEERHGNL	EERMRHLEQ	LEEKNQELQR	ARQREKMEB	HNKRLSDIVD	RLLTESNERL	480
	QLHLKERMAL	LEKNVLIQE	SETFRNLEE	SLHDKERLAE	EIEKLRLSEL	QLKHRTGSLI	540
65	EPTIFRTHLD	TSALRYSVG	SLVDSQSDYR	TTKVIRRP	GRMGVRRDEP	KVKSGLDHEW	600
	NRTQIGIVLS	SHPPESDTEM	SDIDDDRET	IFSSMDLLSP	SGHSDAQTLA	MMLQSLDAI	660
	NKEIRLIQEE	KESTELRAEE	IENRVASVSL	EGLNLARVHP	GTSTITASVTA	SSLASSFPSP	720
	GHSTFKLTPR	SPAREMDRMG	VMTLPSDLRK	HRRKIAVVEE	DGREDKATIK	CETSPFPPTPR	780
	ALRMTHTLPS	SYBNDRSSL	SVSLEPESLG	LGSANSSQDS	LHKAPKKKGI	KSSIGRLFGK	840
70	KEKARLQQLR	GFMEPEAAQ	ESLGLGKLG	QAKDRRLKK	KHELLEEAR	KGLPFAQWDG	900
	PTVVANLELW	LGMFWYVAA	CRANVKSgai	MSALSDTEIQ	REIGISNPLH	RLKRLAIQE	960
	MVSLTSPSAP	PTSRTPSGNV	WVTHEEMENL	AAPARTKESE	EGSWAQCPVP	LQTLAYGDMN	1020
	HEWIGNEWLP	SLGLPQYRSY	FMECLVDARM	LDHLTKKDLR	VHLKMDVSPH	RTSLQYQIMC	1080
	LKRLNYDRKE	LERRREASQH	EIKDVLVWSN	DRIIRWQAI	GLREYANNIL	ESGVHGSLLIA	1140
75	LDENFDYSSL	TLLQLIPTQN	TQARQILERE	YNNLLALGTE	RRLDESDDKN	FRRGSTWRQ	1200
	PPPREVHGIS	MMPGSETLP	AGPRLTTTSG	QSRKMTTIVA	SSRLQLDMS	TVRTYSCL	

80 Nucleic Acid Accession #: NM\_016570  
Coding sequence: 1-1134 (underlined sequences correspond to start and stop codons)



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      TTTTCAACTA TGGCTTTATT AACCATAATG GAATTTCTCAG TATATCAAGA TACATGGATG 180
      AAGTATGAAT ACGAAGTAGA CAAGGATTTT TCTAGCAAAAT TAAGAATTAA TATAGATATT 240
      ACTGTTGCCA TGAAGTGTCA ATATGTTGGA CGGATGTAT TGGATTTAGC AGAAACAATG 300
10     GTTGCATCTG CAGATGGTIT AGTTTATGAA CCAACAGTAT TTGATCTTTC ACCACAGCAG 360
      AAAGAGTGGC AGAGGATGCT GCAGCTGATT CAGAGTAGGC TACAAGAAGA GCATTCACCT 420
      CAAGATGTGA TATTTAAAG TGCTTTTAAA AGTACATCAA CAGCTCTTCC ACCAAGAGAA 480
      GATGATTCAT CACAGTCTCC AAATGCCATG AGAATTCATG GCCATCTATA TGTCAATAAA 540
      GTAGCAGGGA ATTTTCACAT AACAGTGGGC AAGGCAATTC CACATCCTCG TGGTCATGCA 600
      CATTGTCGAG CACTTGTCAA CCATGAATCT TACAATTTT CTATAGAAT AGATCATTTG 660
15     TCCTTTGGAG AGCTTGTGCC AGCAATTTAT AATCCTTTAG ATGGAACCTGA AAAAATTGCT 720
      ATAGATCACA ACCAGATGTT CCAATATTTT ATTACAGTTG TGCCAACAAA ACTACATACA 780
      TATAAATAT CACAGACAC CCATCAGTTT TCTGTGACAG AAGGGGAACG TATCATTAAC 840
      CATGCTGCAG GCAGCCATGG AGTCTCTGGG ATATTTATGA AATATGATCT CAGTCTCTTT 900
      ATGCTGACAG TTAGTGAGGA GCACATGCCA TTCTGGCAGT TTTTGTAGG ACTCTGTGGT 960
20     ATGTTGGAG GAATCTTTTC AACACAGGC ATGTTACATG GAATTTGAAA ATTTATAGTT 1020
      GAAATATATT GCTGCTGTTT CAGACTTGA TCTATATAAC CTGTCAATTC TGTTCCTTTT 1080
      GAGGATGGCC ACACAGACAA CCACCTTACCT CTTTTAGAAA ATAATACACA TTGA

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25 SEQ ID NO:240 PC14 Protein sequence  
Protein Accession #: NP\_057654

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      KEWRMLQLI QSLQEEHSL QDVLPKSAFK STSTALPPRE DDSSQSPNAC RIRHGLYVNR 180
      VAGNFHITVG KATPHFRGHA HLAALVNHEH YNFSHRIDEL SPGELVPAII NFPLDGTESL 240
      IDHNQMFQYF ITVVPKLIHT YKISADTHQF SVTERERILN HAAGSHGVSG IFMKYDLSSL 300
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      EDGATDNHLP LLENNTN

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## SEQ ID NO:241 PBA7 DNA SEQUENCE

40 Nucleic Acid Accession#: AA219134  
Coding sequence: 24-1815 (underlined sequences correspond to start and stop codons)

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35 MWAAAAATCT CAATGAAATA TTTACAAGA AGGAAAAA

Protein Accession #: AAF91431

SEQ ID NO:242 PBA7 Protein sequence:

40 MFTFLSSVTA AVSGLLVGYE LGHSGALLQ IKTLALSLCH EQEMVSSLV IGALLASLTG 60  
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IAPQRRRGLL VSLNELMVI GILSAYISNY AFANVFHGWK YMFGLVPLG VLQALAMYEL 180  
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45 RIMIGLLVLF FVQTGQPNL LFYASTVLKS VGPQSNEAAS LASTGVGVVK VISTPATLL 300  
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50 FLTVLDLGL PWVCFYTIM SLDLGLPWV CFYTIMSLA SLFFVVMFP ETKGCSLEQI 540  
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SEQ ID NO:243 PBA4 DNA sequence:  
Nucleic Acid Accession#: AA172056

Coding sequence: 121-339 (underlined sequences correspond to start and stop codons)

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60 ATGTTTTTTA TACAGAAAGG AGAATGCAGA ATGGTCAGAC TATCATGCAC TGTAAATTT 180  
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AAGAATTTCA AGATAAGTTT AGTTTATGGA AAGACTTTTA TGTGGTTTTT ACTCACTCTT 300  
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CTATGACAAT TGAATAAGGAG CTGTTTGTG ATTTAAAGGT TAAATTCTCT CTAACCAAAC 480  
65 TGCTTGATCC AGATGCAGGA CTGCAATGT TAATATTGTT TCTGGAAGAA CAATCAAATA 540  
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70 AAATGACAAA TCTAAACTAA CAAGTCTTTT GAATTTATGC ATGGTAGTAA ACATTCTCTC 780  
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75 SEQ ID NO:244 PBQ8 DNA SEQUENCE

Nucleic Acid Accession#: X51405  
Coding sequence: 3-1721 (underlined sequence corresponds to start and stop codon)

1 11 21 31 41 51

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	GTGGGCCAG	TGCGGGGCT	GACACTCAT	CAGCCGGGA	AGGTGAGGCG	AGTAGAGGCT	180
	GGTGGGAAC	TGCGGCCCC	CAGCAGCGCC	GGCGGGCTAA	GCCAGGGCC	GGGCAGACAA	240
	AAGAGGCGC	CGCGTAGGA	AGGCAGGGCC	GGCGCGGCG	GAGCGCAGCG	ATGGCCGGGC	300
10	GAGGGGCGC	CGCGCTGCTG	GCTCTGTGCG	GGGCACTGGC	TGCTGCGGG	TGGCTCCTGG	360
	CGCGCGAAG	CCAGGAGCCC	GGCGCGCCCG	CGCGCGGCAT	GAGGCGGCGC	CGCGCGCTGC	420
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	TGTCGGTGTG	GCTGCAGTGC	ACCGCCATCA	GCAGGATTTA	CACGCTGGGG	CGCAGCTTCG	540
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35	CAGTTAATAC	TTAACATGTA	TTTATTTTCT	AATCAITTTAA	ATATTAAATCA	ACTTTCCTTA	1860
	AAATAAATAG	CCTCTTAGGT	AAAAATATAA	GAACTTGATA	TATTTCAATC	TCTTATATAG	1920
	TATTCATTTT	CCTACCTATA	TTACACAAAA	AAGTATAGAA	AAGATTTAAG	TAAATTTGCC	1980
	ATCCTAGGCT	TAAATGCAAT	ATTCCTGGTA	TTATTACAAA	TGCAGAAATT	TTTGAGTAAAT	2040
	TCTAGCTTTC	AAAAATTAGT	GAGTTCTTTT	TACTGTAAAT	GGTGACAATG	TCACATAATG	2100
40	AATGCTATTG	AAAAGGTTAA	CAGATACAGC	TGGAGTTTGT	GAGCACTCTA	CTGCAAGACT	2160
	TAAATAGTTC	AGTATAAATT	GTCTTTTCTT	TCTTGTGCTG	ACTAACTATA	AGCATGAATC	2220
	TGTTAATGCA	TTTTTATGAG	GAAGAAAAGG	TACATGTGTA	CAAGAGGTTT	TTATGAAAAG	2280
	AATAAAATAT	GACTTCTTGC	TTGTACATAT	AGGAGCAATA	CTATTATATT	ATGTAGTCCG	2340
	TTAACACTAC	TTAAAGTTT	AGGGTTTCT	CTTGGTTGTA	GAGTGGCCCA	GAATTGCATT	2400
45	CTGAATGAAT	AAAGGTTAAA	AAAAAATCCC	CAGTGAAAAA	AAA		
	SEQ ID NO:245 PBQ8 Protein sequence						
	Protein Accession#: P16870						
	MAGRGGSAALLALCGALAACG WLLGAEAEQEP GAPAAGMRRR RRLQEDGIS FEYHRYPELR						60
	EALVSVWLQC TAIIRYITVG RSFEGRELLV IELSDNPGVH EPGEPEFYKI GNMHGNEAVG						120
50	RELLILFAYQ LNEYQKGNIE TIVNLIHSTR IHMPSLNPD GFEKAASQPG ELKDWFWGRS						180
	NAQGDILNRN FPDLDRIYVY NEKEGGFNNH LLKNMKKIVD QNTKLAFETK AVIHWIMDIP						240
	FVLSANLHGG DLVANYPYDE TRSGSAHEYS SSPDDAIFQS LARAYSSFN AMSDPNRPPC						300
	RKNDDSSSFV DGTNGGAWY SVPGMGQDFN YLSSNCFEIT VELSCEKFPF EETLTKTYWED						360
	NKNLSLYLE QHRGVKGFV RDLQGNPIAN ATISVEGIDH DVTSKDGIDY WRLLPFGNYK						420
55	LTASAPGYLA ITKVAVPYS PAAGVDPELE SFSEKKEEEK EELMEWVKMM SETLNF						
	SEQ ID NO:246 PBV4 DNA sequence						
	Nucleic Acid Accession#: AF038968						
	Coding sequence: 91-1107 (underlined sequence corresponds to start and stop codon)						
60	1	11	21	31	41	51	
	GGGGGACGCT	GAGCGCGCAG	GGGGGCGGCG	GCCTCGCCTC	GTCTCTCTCT	CTGCGCCTGG	60
	GTCCGGGTGG	TGACCGCGAG	AGCCAGAGAG	ATGTCGGATT	TCGACAGTAA	CCCGTTTGCC	120
65	GACCCGATC	TCAACAATCC	CTTCAAGGAT	CCATCAGTTA	CACAAGTGAC	AAGAAATGTT	180
	CCACCAGGAC	TGATGAATA	TAAATCCATC	TCGGATTCTA	GAACACCTCC	ACCAGCGGCT	240
	GTGAAGATGC	CTAATGTACC	CAATACACAA	CCAGCAATAA	TGAACCAAC	AGAGGAACAT	300
	CCAGCTTATA	CACAGATTGC	AAAGGAACAT	GCAATTGGCC	AAGCTGAATC	TCTTAAGCGC	360
	CACAGAGAAC	TAGAAGAAA	AGCCGCGAG	TTAGATCGTC	GGGAACGAGA	AATGCAAAAC	420
70	CTCAGTCAAC	ATGGTAGAAA	AAATATTGG	CCACCTCTTC	CTAGCAATT	TCTGTGCGGA	480
	CCTTGTCTCT	ATCAGGAATT	TTCTGTAGAC	ATTCCTGTAG	AATTCAAAA	GACAGTAAAG	540
	CTTATGTACT	ACTTGTGGAT	GTTCATGCA	GTACACTGT	TTCTAATAT	CTTCGGATGC	600
	TTGGCTTGGT	TTTGTGTGA	TTCTGCAAGA	CGGTTGATT	TTGGATTGAG	TATCTGTGG	660
	TTCTTGTCTT	TACTCTCTTG	TTCTATTGTC	TGTTGGTACA	GACCACTTTA	TGGAGCTTTC	720
75	AGGAGTGACA	GTTCATTTAG	ATTCTTTGTA	TTCTTCTTCG	TCTATATTG	TGAGTTTGGT	780
	GTACATGTAC	TCCAGCTGC	AGGATTTCAT	AATGGGGGCA	ATTGTGGTTC	GATTTCATCC	840
	CTTACTGGTC	TCAACCAAAA	TATTCCTGTT	GGAATCATGA	TGATAATCAT	AGCAGCACTT	900
	TTCAACAGAT	CAGCAGTCT	CTCACTAGTT	ATGTTCAAAA	AAGTACATGG	ACTATATCGC	960
	ACAACAGGTG	CTAGTTTGA	GAAGGCCCAA	CAGGAGTTTG	CAACAGGTGT	GATGTCCAAC	1020
80	AAAACGTGCT	AGACCGCAGC	TGCAAAATGCA	GCTTCAACTG	CAGCATCTAG	TGCACTCTAG	1080

5 AATGCTTTCA AGGGTAACCA GATTTAAGAA TCTTCAAACA ATACACTGTT ACCTTTTGAC 1140  
 TGTACCTTTT TCTCCAGTTA CTGTATTCTA CAAATATTTT TATGTTCAAA ACACACAGTA 1200  
 CAGACAGCAT GGATATTTC TGTTCACCTG TGCATGGGCT AAAACCAGGA AAACCTCCTT 1260  
 GTCTTATTAC TTACCTTAAT AGTTTCTTAA TATTTCAGTG CCCCTTGCG AGAAAAATAT 1320  
 ACATGCTAAA TAATATTTCT CCATATTTT GGGGGATGAC ATTCAGTGAA TTATTTCAGT 1380  
 GGTGACCCAC TGAATAATTA TAATGGTACT TATGATTAAA AACGCATTTA ATACTAATCT 1440  
 CAGTAGTTCT TTCAAGATAT TTTAGAGATA AGGATTGCAC ATTGGAAAAG TAAACCATGT 1500  
 10 TTCAATCCCT TTCCCTTATT TATATTGAAA GAAATAGGCC AGCAGAGACT TAGGGATTTT 1560  
 AAATTTGGCT GCTTTTTCAG TGTTCAGTCC ACCAGTGAAG AGCCTATGTG CATTTTGTAG 1620  
 TAGATAATGT AAATTTGTC ATCTTTTCT TTTCTTTT TTAGAATAGC TGATAATTTG 1680  
 ATAACAATCT CTAATTTGCA TGGGCACCAC ATTCTTTATA TTAAAGAAT TAGTGTTTTG 1740  
 GCTTCTGTAC TGTCTATGGT TGTAGGATTC AGGGGTTAAT GGAATCACAG AAATGATATT 1800  
 CTGCAAGAAAT TTCTTTTAAA TAAAAAGTTT GGGGGTGCAA TATAAGAGT TTATATAATA 1860  
 15 TGCAGTACAT TATCCAAAAG AGAAGGTAGT TAATGCAGTA GAAAGTAGTG GTAATAATTC 1920  
 CTTTTT

**SEQ ID NO: 247 PBH4 Protein sequence:**

20 Protein Accession #:   
 MSDFDSNPFA DPDLNFFKD PSVTQVTRNV PPGLDEYNFF SDSRTIPPPG VKMPNVNTQ 60  
 PAIMKPTIEH PAYTQIAKEH ALAQALLKR QEELERKAAE LDRREREMQN LSQHRKNIW 120  
 PPLPSNFPVG PCFYQESVD IPVERQKTVK LMYYLWMFHA VILFLNIFGC LAWFCVDSAR 180  
 25 AVDFGLSILW FLFTPCSFV CWYRPLYGAF RSDSSFRFFV FFFVYICQFA VHVLAAGGFH 240  
 NWNCGWISS LTGLNQIPV GIMMIIAAL FTASAVISLV MFKKVHGLYR TTGASFEKAQ 300  
 QEFATGVMSN KTVQTAAANA ASTAASSAAQ NAFKGNQI

**SEQ ID NO: 248 PBH2 DNA sequence**

30 Nucleic Acid Accession#: none found  
 Coding sequence: 1-613 (underlined sequence corresponds to start and stop codon)

35 ATGAGAGACA ATAAATCGTG TGCTTTTTC ATGGGAAAGT TAAATGTTG TTTTGAAGGC 60  
 ACAGTAATAG CAGGCTATTC AGTGTITGCC ACTACCTGCA TCATTCATCT GGCTGTAGCT 120  
 AGTGCACTAC AATTTCCTAA AAAAGTCTCT CACCTCACA GGACTGCTCT ACATCTGGCC 180  
 TCTGCCAATG GAAATTCAGA AGTAGTAAAA CTCCTGCTGG ACAGACGATG TCAACTTAAT 240  
 ATCCTTGACA ACAAAGAGAG GACAGCTCTG ACAAAGGCGG TACAATGCCA GGAAGATGAA 300  
 40 TGTGGGTGTA TGTGTGCTGA ACATGGCACT GATCCGAATA TTCCAGATGA GTATGGAAAT 360  
 AOCGCTCTAC ACTATGCTAT CTACAATGAA GATAAATTAA TGGCCAAAGC ACTGCTCTTA 420  
 TACGGTGTCT ATATGGAATC AAAAAACAAG CATGGCTCTA CACCAGTGT ACTTGTGTGA 480  
 CATGAGCAAA AACAGCAAGT GGTGAAATTT TTAATCAAGA AAAAAGCAAA TTAAATGCA 540  
 CTGGATAGAT ATGGAAGGTG TGTGACCTTG GGAACGTTAT TTACCACCAA ATATGTTGTC 600  
 45 ATATATGAAA AGTAG

**SEQ ID NO: 249 PBH2 Protein sequence:**

Protein Accession #: none found  
 50 MRDNKSCAFF MGKLVNCFEG TVIAGYSVFA TTCIHLAVA SALQFFKSS HPHRTALHLA 60  
 SANGNSEVVK LLLDRROQLN ILDNKKRTAL TKAVQCQEDE CALMLLEHGT DPNPDEYGN 120  
 TALHYAIYNE DELMAKALL YGADIESKNK HGLTPLLGV HEQKQVVKV LIRKKANLNA 180  
 LDYRGRCVTL GTLFTTKYVV IYEK

**SEQ ID NO: 250 PBH1 DNA sequence**

Nucleic Acid Accession#: XM\_005829  
 Coding sequence: 1-3043 (underlined sequence corresponds to start and stop codon)

60 ATGGTGATCA TCTATCTTC TTCTGCAAT TATTACATGG AGTCTACAG AGAAGAGCTT 60  
 CCCACATTG ACTATTTGAT TGACATTCAG TTGCAACAG GAAAGGTTAC TCAGCCGGGA 120  
 GAGGACACTT CCTACCATCA ATGCCCTCAG CTGGAAGCCA GAGACGAAGG CACCGACAGT 180  
 TTATTATTAA ACAATGGCAG CAGCGCCACG CTGAAGACAC GAACGCGCTG TTATGGAACC 240  
 65 CCCAGAGGTC TCCCCATCG TAGCCTGCTC CAGCCGACTC CGCCACATG TAAACGAAG 300  
 ATCAGGAGCA GATTGGAAGA ATTACAAAGT GAATTGGTGC CAGTCAGCAT GTCAGAGACA 360  
 GACCACATAG CCTCTACTTC CTCTGATAAA AATGTTGGGA AAACACCTGA ATTAAGGAA 420  
 GACTCATGCA ACTTGTTC TGGCAATGAA AGCAGCAAAT TAGAAAATGA GTCCAAACTA 480  
 TGTTCATTAA ACACGTGATA AACCTTATGT CAACCTAATG AGCATAATAA TCGAATTGAA 540  
 GCCCAGGAAA ATTATATTCC AGATCATGGT GGAGGTGAGG ATTCTGTGTC CAAACAGAC 600  
 70 ACAGGCTCAG AAAATCTTGA ACAAATAGCT AATTTTCCTA GTGGAATTT TGCTAAACAT 660  
 ATTTCAAAAA CAAATGAAAC AGAACAGAAA GTAACACAAA TATTGGTGGG ATTAAGGTCA 720  
 TCTACATTC CAGAATCAGC TAATGAAAAG ACTTATTCAG AAAGCCCTTA TGATACAGAC 780  
 TGCACCAAGA AATTATTTC AAAAAATAAG AGCGTTTCAG CATCAGAGGA TTTGTGGAA 840  
 GAAATAGAAT CTGAGCTCTT ATCTACGGAG TTGCAGAAC ATCGAGTACC AAATGGAATG 900  
 75 AATAAGGGAG AACATGCATT AGTCTGTGTT GAAAAGTGTG TGCAAGATAA ATATTTCAG 960  
 CAGGAACATA TCATAAAAAA GTTAATTAAA GAAAATAAGA AGCATCAGGA GCTCTTCGTA 1020  
 GACATTTGTT CAGAAAAAGA CAATTTAAGA GAAGAACTAA AGAAAAGAAC AGAACTGAG 1080  
 AAGCAGCATA TGAACACAAT TAAACAGTTA GAATCAAGAA TAGAAGAACT TAATAAGAA 1140  
 GTTAAAGCTT CCAGAGATCA ACTAATAGCT CAAGACGTTA CAGCTAAAAA TGCAGTTCAG 1200

CAGTTACACA AAGAGATGGC CCAACGGATG GAACAGGCCA ACAAGAAATG TGAAGAGGCA 1260  
 CGCCAAGAAA AAGAAGCAAT GGTAAATGAAA TATGTAAGAG GTGAGAAAGG ATCTTTAGAT 1320  
 CTTCGAAAGG AAAAAGAGAC ACTTGAGAAA AAACCTTAGAG ATGCAAAATA GGAACCTGAG 1380  
 5 AAAAACTA ACAAAATTA GCAGCTTCT CAGGAGAAAG GACGGTTGCA CCAGCTGTAT 1440  
 GAAACTAAGG AAGGCGAAAC GACTAGACTC ATCAGAGAAA TAGACAAATT AAAGGAAGAC 1500  
 ATTAATCTTC ACGTATCAAA AGTAAAGTGG GCACAAAACA AATTAAGAGC TGAATGGAT 1560  
 TCACACAAGG AAACCAAGA TAACTCAAA GAAACAACA CAAATTAAC ACAAGCAAAG 1620  
 GAAGAAGCAG ATCAGATACG AAAAACTGT CAGGATATGA TAAAAACATA TCAGGAGTCA 1680  
 10 GAAGAAATTA AATCAATGA GCTTGATGCA AAGCTTAGAG TCACAAAAGG AGAAGCTTGA 1740  
 AAACAAATGC AAGAAAAATC TGACCAGCTA GAGATGCATC ATGCCAAAT AAAGGAACTA 1800  
 GAAGATCTGA AGAGAACATT TAAGGAGGGT ATGGATGAGT TAAGAACACT GAGAACAAAG 1860  
 GTGAAATGTC TAGAAGATGA ACGATTAAGA ACAGAAGATG AATTATCAAA ATATAAGGAA 1920  
 ATTATTAATC GCCAAAAAGC TGAATTCAG AATTATTGG ACAAGGTGAA AACTGCAGAT 1980  
 CAGCTACAGG AGCAGCTTCA AAGAGGTAA GCAGAAATG AAAATTGAA AGAAGAAAGT 2040  
 15 GAAAGTCTTA ATTCTTGTAT TAATGACCTA CAAAAAGACA TCGAAGGCAG TAGGAAAAGA 2100  
 GAATCTGAGC TGCTGTCTGT TACAGAAAGG CTCAGTAGTA AGAATGCACA GCTTCAGTCT 2160  
 GAATCCAATT CTTCGAGTC ACAATTGAT AAAGTTTCT GTAGTAAAG TCAGTTACAA 2220  
 AGCCAGTGTG AAAAAATGAA ACAGACAAAT ATTAATTGG AAAGTAGGT GTTGAAAGAG 2280  
 GAAGAACTGC GAAAGAGGA AGTCCAACT CTGCAAGCTG AACTGCTTG TAGACAAACA 2340  
 20 GAAGTTAAGC CATTGAATAC CCAGGTAGAA GAATTAAGAG ATGAGTTAGT AACTCAGAGA 2400  
 CGTAAACATG CCTCTAGTAT CAAGGATCTC ACCAAACAC TTCAGCAAGC ACGAAGAAAA 2460  
 TTAGATCAGG TTGAGAGTGG AAGCTATGAC AAAGAAGTCA GCAGCATGGG AAGTGTCTCT 2520  
 AGTTCATCAG GGTCCCTGAA TGCTCGAAGC AGTGCAGAAG ATCGATCTCC AGAAAAATCT 2580  
 GGGTCTCAG TAGCTGTGGA TAACCTTTCCA CAAGTAGATA AGGCCATGTT GATTGAGAGA 2640  
 25 ATAGTTAGGC TGCAAAAAGC ACATGCCCGG AAAAAAGAAA AGATAGAATT TATGAGGAC 2700  
 CACATCAAC AACTGTGGA AGAAATTAGG AAAAAACAA AATAATTCA AAGTTATATT 2760  
 TTACGAGAAG AATCAGGCAC ACTTCTTCA GAGGCATCTG ATTTAACA AGTTCATTTA 2820  
 AGTAGACGGG GTGCGCATCAT GGCATCTTTA TATACATCC ATCCAGCTGA CAATGGATTA 2880  
 ACATTGGAGC TCTCTTGA AATCAACCGA AAATTACAGG CTGTTTGA GGATACGTTA 2940  
 30 CTAAAAATA TTACTTTGAA GGAATACTA CAAACACTG GAACAGAAAT AGAACGCTCT 3000  
 ATTAACACCC AGCATGAAT AGAACAGAGG ACAAAGAAAA CCTTAAACAA GCCTCTTGCT 3060  
 CAGTAAAGAG ACAAAGACA CACAGGAGTA GGTGCCACTG ACCTCTATTG TTGAGAGACT 3120  
 TGTTCACATT TTTGTTTCAG CCAATAAAAA TATTGTTTG CTTCATCTGT ACACAAAAAA 3180  
 35 ATACCTTTT ACAATATGAA TGCATTGCTG TATATCTGT AAGACTGAAA GCTTTGATGA 3240  
 AATTGTTTT TGTATGGTGC AATATGACAG CCGTCAATTG AATCTAAACA ACTTAATTG 3300  
 CTGTATTACA TAAGAAGTGT TGAACATTAC AAGGCTTTTT AT

40 Protein Accession #: SEQ ID NO:251 PBJ1 Protein sequence:  
 NP\_060487

45 MVITYLSFCN YMEFYREEL PHIDYLDIQ FATGKVTPQG EDTSYHQCAQ LEARDEGIDS 60  
 LLLNNGSSAT LKTRTRCYGT PRGLPHRSLL QTPPTCKTK IRSRFEELQS ELVPVSMSET 120  
 DHIATSSDK NVGKTPELKE DSCNLFSGNE SSKLENESKL LSLNTDKTLC QPNEHNNRIE 180  
 AQENYIPDHG GGEDSCAKTD TGSENSEQLA NFPSGNFAKH ISKTNEEQK VTOILVELRS 240  
 STFPSEANEK TYSESPYDID CTKFISKIK SVSASEDLLE HIESELLSTE FAEHRVPNGM 300  
 NKGHEHLVLF EKCVCQDKYQ QEHIIKLIK ENKKHQLFV DICSEKDLR EELKKRTETE 360  
 50 KQHMTITKQL ESRIENLKE VKASRDQLIA QDVTAQNAVQ QLHKEMAQRM EQANKKCEEA 420  
 RQKEAMVMK VYRGEKESLD LRKEKETLEK KLRDANKLE KNTNKIKQLS QEKGRHLQLY 480  
 ETKEGETTRL IREIDKLKED INSHVIVKW AQNKLKAEMD SHKETKDKLK ETTTKLTQAK 540  
 EADQIRKNC QDMIKTYQES EBIKSNELDA KLRVTKGELE KQMKEKSDQL EMHHAHAKEL 600  
 EDLKRFTFKEG MDLRLTLTK VKCLEDERLR TEDELSKYKE INRQKAEIQ NLLDKVKTAD 660  
 55 QLQBLQQRGK QEENLKEEV ESLSLNLIDL QKDIEGSRKR ESELLLTER LTSKNAQLQS 720  
 ENSLSQSFQ KYSCSEQLQ SQCEQMKQTN INLESRLKE EELRKEFVOT LQAEACRQT 780  
 EVKALSTQVE ELKDELVTQR RKHASSIKDL TKQLQARRK LDQVESGSYD KEVSSMGSR 840  
 SSSGSLNARS SAEDRSFENT GSSVAVDNFF QVDKAMLIER IVRLQKAHAR KNEKIEFMED 900  
 HIKQLVEEIR KTKIKIYSYI LREESGTLSS EASDPNKVHL SRRGGIMASL YTSHPADNGL 960  
 TLELSLEINR KLQAVLEDTL LKNITLKENL QTLGTEIERL IKHQUELEQR TKKT

60 SEQ ID NO:252 PBJ6 DNA sequence  
 Nucleic Acid Accession#: D83760  
 Coding sequence: 56-1459 (underlined sequence corresponds to start and stop codon)

65 1 11 21 31 41 51  
 | | | | |  
 TTCCCGTGAA GGGCTGTGGC GTTCCCGTGC GCGCCGGAGC CTGCTGTGGC CTCTTATGCA 60  
 CTCCACCACC CCCATCAGCT CCTCTTCTC CTTCACCAGC CCGCGAGTGA AGAGACTGCT 120  
 AGGCTTGAAG CAAGGAGATG AAGAGGAAAA GTGGGCAGAG AAGGCACTGG ACTCTCTAGT 180  
 70 GAAGAAGTTA AAGAAGAAGA AGGGAGCCAT GGACGAGCTG GAGAGGGCTC TCAGCTGCCC 240  
 GGGGCGCCCC AGCAATTCGG TCACGATTCC CCGCTCCCTG GACGGCGGGC TGCAGGTGTC 300  
 CCACGCGAAG GGCTTCCCCC ATGTGATTTA CTGTCGCGTG TGGCGCTGGC CGGATCTGCA 360  
 GTCCCAACCAC GAGCTGAAGC CGCTGGAGTG CTGTGAGTTC CCAATTGGCT CCAAGCAGAA 420  
 AGAAGTGTGC ATTAAACCTT ACCACTACCG CCGGGTGGAG ACTCCAGTAC TGCTCTCTGT 480  
 75 GCTCTGTCCA AGACACAGTG AATATAACCC CCAGCTCAGC CTCTTGCCCA AGTTCGCCAG 540  
 CGCTTCCTCG CACAGTGAAG CACTCATGCC ACACAACGCC ACCTATCCTG ACTCTTTCCA 600  
 GCAGCCTCGG TGCTCTGCAC TCCTCTCCCT ACCCAGCCAC GCGTCTCCCT AGTCCCGCTG 660  
 CACGCGCAGC TACCTCTACT CCCCAGGAAG TCCTTCTGAG CCAGAGAGTC CTTATCAACA 720  
 CTCAGTTGAC ACACCACCCC TGCTCTTATCA TGCCACAGAA GCTCTGAGA CCGAGAGTGG 780

5 CCAACCTGTA GATGCCACAG CTGATAGACA TGTAGTGCTA TCGATACCAA ATGGAGACTT 840  
 TCGAACCAGTT TGTACGAGG AGCCCCAGCA CTGGTGTCTG GTCCGCTACT ATGAAC TGAA 900  
 CAACCCAGITT GGGGAGACAT TCCAGGCTTC CTCCGAAAGT GTGCTCATAG ATGGGTTCAC 960  
 CGACCCCTCA AATAACAGGA ACAGATTCTG TCTTGGACTT CTTTCTAATG TAAACAGAAA 1020  
 CTCAACGATA GAAATACCA GGAGACATAT AGGAAAGGAT GTGCACTTGT ACTACGTCGG 1080  
 GGGAGAGGTT TATGCCGAGT GCGTGAATGA CAGCAGCATC TTTGTGCAGA GCCGGAAC TG 1140  
 CAACTATCAA CACGCTTCC ACCCAGCTAC CGTCTGCAAG ATCCCCAGCG GCTGCAGCCT 1200  
 CAAGGCTTTC AACAAACAGC TCTTGGCTCA GCTCCTGGCC CAGTCAGTTC ACCACGGCTT 1260  
 10 TGAAGTCGTT TATGAATGA CCAAGATGTT TACTATCCGG ATGAGTTTGT TTAAGGGTTG 1320  
 GGGTGTCTGAG TATCATCGCC AGGATGTAC CAGCACCCGC TGCTGGATTG AGATTCTATCT 1380  
 TCATGGGCCA CTGCAGTGGC TGGACAAAGT TCTGACTCAG ATGGGCTCTC CACATAACCC 1440  
 CATTTCTTCA GTGTCTTAC AGTCATGTCT TAAGCTGCAT TTCCATAGGA T

15 **SEQ ID NO:253 PB16 Protein sequence:**  
 Protein Accession #: NP\_005698

20 MHSTPISSL FSFTSPAVKR LLGWKQGDDE EKWA EKA VDS LVKKLKKKKG AMDELRALS 60  
 CPGGPSKCVT IPRSLDRLQ VSHRGLPHV IYCRVWRWPD LQSHHELKPL ECCEFFPGSK 120  
 QKEVCINPYH YRRVETPVL PVLVRHSEY NPQLSLLAKF RSASLHSEPL MFHNATYFDS 180  
 FQQPPCSALP PSPSHAFSPS PCTASYHSP GSPSEPFY QHSVDTPPLP YHATEASETQ 240  
 SGQFVDATAD RHVLSIFNG DFRPVCYEP OHWC SVAYYE LNNRVGETFO ASSRSVLIDG 300  
 FIDPSNNRNR FCLGLLSNVN RNSTIENTRR HIGKGVHLYY VGGEVYAEVC SDSSIFVQSR 360  
 25 NCN YQHGHFP ATVCCKPSGC SLKVFNQLF AQLLAQSVHH GFEVYVELTK MCTIRMSFVK 420  
 GWGAEYHRQD VSTPFCWIEI HLHGLPLQWD KVLTMGSPH NPISVS

30 **SEQ ID NO:254 PB18 DNA sequence**  
 Nucleic Acid Accession#: AB04684  
 Coding sequence: 472-4377 (underlined sequence corresponds to start and stop codon)

35 1 11 21 31 41 51  
 | | | | | |  
 TGCAGGTTTG CAGGCTCTGA GATTAATGCG GCTTTTCTCT CTTTTCCTTT TTGCTTAAGG 60  
 GATGGACAAAG GAGCTGAGAT TTATGACCTT TATTAGAGAA AAAAATGTGC CTTGCTAGGG 120  
 TGGGGAGACT TGGTGTATGC AGTCTCTCTC TCTCTTCTCT GGTGTTTATA ACAAAACAAA 180  
 ACCAAATGGA ACTGAGGGGT TTGTAATGGT AGTTTGTGTT TTGCTGGAGA ATGCTACTTT 240  
 GCATGCTTTT TTTCTCTTGC AGGGTATGTT CTGTCTTGTG CTTTTCCTTT TAGAAGCTAC 300  
 TAAAGGGTGT TGGGATGCT TCTGACTATT ATGAAGGCCA AAAGGCTGT TGACTGGGGC 360  
 40 TGCTTTTAAAC CTTTCTCTAT TTGCTGAGAA TGCAGCCGTG TGACAGTAAC TGAACATTGG 420  
 TCTAAGTCTT TTCCAAAGAG TCAAGGTTC AAGAATCATC TGCTCAAAAT AATGACCATG 480  
 GGGGATATGA AGACCCGAGA CTTTGTATGAC CTCTGGCAG CATTTGACAT CCGAGATATG 540  
 GTGATCTCTA AAGCAGCTAT TGAGTCTGGA CACGATGACC ATGAAGGCCA CATGAAGCAG 600  
 AATGCTCACG GAGAGGATGA CTCCACGCA CCATCATCTT CTGATGTGGG TGTGAGCGTT 660  
 45 ATGCTCAAGA ATGCTGAGAT CATTGACTCT TCCGAGGGCG GGGAGAAAGA CGGCCACAC 720  
 CCCACTGGCA ATGGCTTACA TAATGGGTTT CTCACAGCAT CCTCCCTTGA CAGTTACAGT 780  
 AAGATGAGAG CAAGTCTCTT GAAAGGAGAT GTGCTGCTCT CTGAGGTGAC ACTGAAAGAC 840  
 TCGACATGGA GCGATTTTAA CCGCATCTCC AGTGTCTGAG AGTTTGATGA CGACGAGAAG 900  
 50 ATGAGGTGGG ATGACCCGCC TGACAAGGAG GACATGCGAT CAGCTTTCAG GTGCAATGTG 960  
 TTGACGGGGT CCGCTCCCCA GCAGGACTAC GATAAGCTGA AGGCACTCGG AGGGGAAAAC 1020  
 TCCAGCAAAA CTGACTCTCT TACGTGAGGC AATGTGGAGA AAAACAAGC TGTTAAGAGA 1080  
 GAAACAGTAG CAGTCTCTAT AAACCTGAGT GTTTATGAAC CTTTAAAGT CAGAAAAGCA 1140  
 GAGGATAAAT TGAAGGAAG CTCTGACAAG GTGCTGGAAA ACAGAGTCTC AGATGGGAGA 1200  
 55 CTGAGCTCCG AGAAGATGA CACGACCTC CCGAGCGTTG CGCCATCAAA GACAAAGTCG 1260  
 TCCCAACAGC TCTGCTCTG CATCGCTGCC ATCGCGGCTC TCAGCGCTAA AAAGCGGGCT 1320  
 TCAGACTCCT GCAAGAAGC AGTGGCAAT TCGAGGGGAT CCTCCCGGTT ACCAAAGAA 1380  
 GTAATGACA GTCCGAGAGC CGCTGACAAG TCTCCTGAAT CCCAGAAATC CATCGACGGG 1440  
 ACCAAAGAAC CATCCCTGAA GCAACCGGAT AGTCCCGAAG GCATCTCAAG TGAGAACAGC 1500  
 60 AGCAAGAGAT CCCCCTCTC TCCCGCAGGG TCCACACCA CAATCCCAAA AGTCCGCATA 1560  
 AAAACCATTA AGACATCTTC TGGGGAATC AAGAGACAG TGACCAAGGT ATTGCCAGAA 1620  
 GTGGATCTTG ACTCTGAAA GAAACCTTCC GAGCAGACAG CGTCCGTGAT GGCCTCTGTG 1680  
 ACATCCCTTC TGTGCTCTCC AGCATCAGCC GCGCTCTCTT CCTCTCCCCC CAGGGCGGCT 1740  
 CTCAGCTCTG CGGTCTGTAC CAATGCAGTT TCCCTCTGAG AGCTCACCCC CAACAGGTC 1800  
 65 ACAATCAAGC CTGTGGCTAC TGCTTTCTCT CCAGTGTCTG CTGTGAAGAC GGCAGGATCC 1860  
 CAAGTCATTA ATTTGAAGCT CGCTAACAA ACCACGGTGA AAGCCACGGT CATATCTGCT 1920  
 GCTCTGTGCC AGAGTGCCAG CAGCGCCATC ATTAAAGCTG CCAACGCCAT CCAGCAGCAA 1980  
 ACTGTCTGGG TGCCGGCATC CAGCTGTGCC AATGCCAAAC TCGTGCCAAA GACTGTGCAC 2040  
 CTTGCCAACC TTAACCTTTT GCTCAGGGT GCCCAGGCCA CCTCTGAAT CCGCCAAGT 2100  
 70 CTAAACAAAC CTCAGCAACA AATAAGCAG GCAATATCA ATGCAGCAG CTGCAACACC 2160  
 CCAAAAAGG TGCTCTGAGT CCAGTGTGTG TCGTCTTTC AGAGTCTGCT GGTGGAAGCT 2220  
 TCAACAAGG TGCTGAGCAG TGTCAATCCA GCTCCTGTTT ACATCCCAAA CCTCAGTCTC 2280  
 CCGGCCAATG CAGGATCTAC GTTACCGACG CGTGGGTACA AGTGTCTGGA GTGTGGGGAC 2340  
 TCCCTTGCAC TTGAAAAGAG TCTGACCCAG CACTAAGACA GACGGAGCGT GGCATCGAA 2400  
 75 GTAACGTGCA ACCATTGTAC AAAGAACCCT GTTTTTTACA ACAATGACG CCTCTTTTCC 2460  
 CATGCCCTGT GGCATAAGGA GAAAGGGGTG GTATATGCAAT GCTCCCACTT AATTTTAAAG 2520  
 CCAGTCCCAAG CAGATCAAAAT GATAGTTTCT CCGTCAAGCA ATACTTCCAC TTCACTTCC 2580  
 ACTCTTTCAG GCCCTGTGGG AGCTGGCACA CACTGTGTA CAAAATTTCA GTCTGGCATA 2640  
 ACTGGGCAG CTCATATCGG TCCTTCAAGC ACTCCCATCA CCCCAGCCAT GCGCTTAGAT 2700  
 80 GAAGACCCCT CCAACTGTGT TAGACATAGT CTAAATGTGT TGGAGTGTAA TGAAGTCTTC 2760  
 CAGGACGAGA CATCACTGGC TACACATTTT CAGCAGGCTG CAGATACGAG TGGACAAAAG 2820

	ACTTGCAC	TCTGCCAGAT	GCTGCTTCCT	AACCAGTGCA	GTTATGCATC	ACACCAGAGA	2880
	ATCCATCAGC	ACAAATCTCC	CTACACCTGC	CCTGAGTGTG	GGGCCATCTG	CAGGTGCGTG	2940
	CACCTTCAGA	CCACCGTCAC	CAAGAACTGT	CTGCACATCA	CGAGGAGAGT	TGGTTCCTCGA	3000
5	TGTGTGCATT	GCAATGTTGT	GTACTCTGAT	GTGGCTGCCT	TGAAGTCTCA	CAITCAAGGT	3060
	TCTCATCTGT	AAGTCTTCTA	CAAGTGTCTT	ATTGTGCCAA	TGGCGTTTAA	GTCTGCCCCA	3120
	AGCACACATT	CCACGCGCTA	CACACAGCAT	CCTGGCATCA	AGATAGGAGA	ACCAAAAAATA	3180
	ATATATAAGT	GTTCCATGTG	CGACACTGTG	TTCACCTTGC	AAACCTTGCT	GTATCGCCAC	3240
	TTTGACCAAC	ACATTTGAAAA	CCGAAGGTG	TCTGTTTCCA	AGTGTCCAGA	CTGTCTCTCT	3300
10	TTATATGCAC	AGAAGCAACT	TATGATGGAC	CATATCAAGT	CTATGCATGG	AACATTGAAA	3360
	AGTATTGAAG	GGCTTCCAAA	CTTGGGTATA	AACCTGCCTT	TGAGCATTAA	GCCTGCAACT	3420
	CAAAATTCAG	CAAAATCAGAA	CAAGAGGAGC	ACCAAAATCCA	TGAATGGGAA	AGAGAAATTTG	3480
	GAAAAGAAAT	CTCCATCTCC	TGTGAAAAAA	TCAATGGAAA	CCAAGAAAGT	GGCCAGTCCCT	3540
	GGGTGGACGT	GTGGGAGGTG	TGACTGCCTG	TTCATGCAGA	GAGATGTGTA	CATATCCAC	3600
15	GTGAGGAAGG	AGCACGGGAA	GCAAAATGAAG	AAACACCCCT	GCCGCCAGTG	TGACAAAGTCT	3660
	TTGAGTCTGT	CCACACGCTT	GTGCCGGCAC	AACCGGATCA	AGCACAAAGG	CATCAGGAAA	3720
	GTGTACGCTT	GCTGCCACTG	CCGAGACTCC	AGACGTACCT	TTACCAAAGC	TTTGTATGCTG	3780
	GAGAAGCAGG	TCCAGCTGAT	GCATGGCATC	AAGGAACCTG	ACCTGAAAGA	AATGACAGAT	3840
	GCCACCAATG	AGGAGGAAAC	AGAAATAAAA	GAAGACATCA	AGGTCCCCAG	TCCCAAGCGG	3900
20	AAGTTGGGAG	AACCACTTCT	GGAGTTTCAGG	CCTCCCGGAG	GAGCAATCAC	TCAACCACTG	3960
	AAAAAGCTGA	AAATCAATGT	TTTTAAGGTT	CACAAGTGTG	CCGTGTGTGG	CTTCACCACC	4020
	GAAACCTGCG	TGCAATTCCTA	CGAACACATC	CCTCAGCACA	AATCGGATGG	TTCTTCTTAC	4080
	CAGTGCCTGG	AGTGTGCGCT	CTGCTACACG	TCTCAGCTCT	CTCTGTCCAG	GCACCTCTTC	4140
	ATCGTACACA	AGTTAAAGGA	ACCTCAGCCA	GTGTCCAAGC	AAAATGGGGC	TGGGGAAGAT	4200
25	AACCAACAGG	AGAACAACCC	CAGCCACGAG	GATGAATCCC	CTGATGGCGC	CGTGTGAGAT	4260
	AGAAAGTGCA	AAGTGTGCGC	AAAAACTTTT	GAACTGGAAG	CTGCCTTAAA	TACTCACATG	4320
	CGGACACACG	GCATGGCCTT	CATCAATATC	AAAAGGATGA	GCTCAGCCGA	GAATAGCCCA	4380
	CAGATGCTCC	ATGAGGAAAA	TCCCTGTCCA	CATTGGGAATA	AAAAAGACAT	TTTTGTATCA	4440
	AAGTTTGAGC	TATAATAGAG	TTAACAGTAC	TGTCTAGGCT	GTTCGAATAT	ATCTCTCTTC	4500
30	AATGTACCTT	CTTTCACCTC	GTCTGATATA	TCTCGATATA	GTATTAATAAC	AGTATTGTAG	4560
	TTTAAAGAGC	TTTGTATATA	TTTAAATGAA	TAACTTTTAA	TACTCTTTGT	TACATGTTTG	4620
	TATCAGATT	TAGTGAAGAA	CCATTGTAGT	TGTTTTGGGT	TAGAAATTTT	CTTTTTGTAC	4680
	TGTTCTCTTA	AAACAGAGTT	CTTAGTAACA	GGGGCAGTTC	CTGAATTCAA	ATAAACCAAT	4740
	TTGATGTGTT	GGATTTTTGA	TGGGTTAACT	AAATACAGGC	TAAATAATAG	CCTTTTTTAG	4800
35	TGTTTTTAAT	TTTTAGAAAT	CACATACATA	ATTGTAAGTA	ATTGTGGGTC	TCAAAAACAC	4860
	TAGGAACCTT	TAAAGTGTCT	AGCACTTCTT	CGATGTGCTT	GGCCTGAGGG	AGTGAGTTCA	4920
	CATTGTAGAC	AACCTGCACT	CAGTGTGGAC	GTGCTTTTGT	CTTCAGGCCA	TGCCGAAGGG	4980
	TGTTTAAAGC	AGTCTTCCAG	GTGCTCTCTT	TCCAGCCGCT	GGATAAAAC	TGAAGCTAGG	5040
	AACTAATAAA	GGAAATGCTGA	TTTCTCTAGT	TCCATTTTGA	GGAAATGGGA	AGGCTATTCT	5100
40	AAAGAAAAAA	ATGGAATTTG	TTTTCTCGGC	AGATCTGCAG	GGCTGGCTTT	AAGAGCACAA	5160
	GGAGGGAAGG	TAAAGAAAGG	GCTGGACTAC	TATAAAAGTT	ACAAATACGT	AGTTAGACCA	5220
	ATAGATTGAT	ATAGTCAGGT	TTTTGTCTAT	TAAATTTATTA	ACTAACTATT	ACAGAAACAC	5280
	AGCTAAGAT	ATCAAGTATT	TCTCTGGCTC	TTGACAGAAA	AAAATCAGTT	GACTTAAACC	5340
	TTTGTCTGCA	AAAGAGTTGG	CGTTTCTGCT	TCTGGGTGCT	ACTGCCAAAC	GTTATGGTAC	5400
45	TTAGAGTCGG	GATGCACAAC	TTCAACCACC	GACTTATCAA	TGCAGCCGCC	TGTGTATTGC	5460
	AATTTGCCCT	TACCTTAAAG	ACTGAGCCAC	CCGGGTTTAT	TTAGCCCAT	TCAAGAGATTA	5520
	TATTTAAAGT	CGGTAGTTCT	GCTTTATTTA	AATGCAGCAG	AGGTACTCTT	CTGTCCCTTC	5580
	CGTTTATAGT	TCTCTGAGAG	AGTTCTATTT	TTTGGTTTGT	TTTTGTGTTT	TCCTTTTGAT	5640
	TTTGTATCTT	GATTTTATCC	CTGAACATGT	TTTGTACCTT	TTTTTTTTTT	TTTTTTTTTA	5700
50	GAAAGGAAAT	TCTTTTGTGT	ATATATAGAT	ACTTGCATGA	TATACTGTAG	TCAATGTTCTG	5760
	GTCTCTCAAA	AGGTCTTGCT	GCTGTACAGT	GTTATGCATG	CCATCCATCA	TAACTGTATG	5820
	AAACACATTT	CATATGTAAA	TAAACGTGGG	ACATTTTG			

55 Protein Accession #: SEQ ID NO:255 PB18 Protein sequence:  
BAB13455

60 MKTPDFDILL AAFDIPDMVD PKAAIESGHD DHESHMKQNA HGEDDSHAPS SSDVGVSVIV 60  
KNVRNIDSSSE GGEKDGHNPT GNGLHNGFLT ASSLDSYSKD GAKSLKGDVP ASEVTLKDST 120  
FSQFSPISA EEFDDDEKIE VDDPPDKEDM RSSFRSNVLT GSAPOQDYDK LKALGGENSS 180  
KTGLSTSGNV EKNKAVKRET EASSINLSVY EPFKVYKAEK KJKESSDKVL ENRVLDGKLS 240  
SEKNDTSLPS VAPSKTKSSS KLSSCIAAIA ALSAKKAASD SCKEPVANSR ESSPLPKEVN 300  
DSPRAADKSP EQNLIDGK KPSLKQPDSP RSISSENSK GSPSPAGST PAIPKVRKT 360  
IKTSSGEIKR TVTRVLEFVD LDSGKPKSEQ TASVMASVTS LLSPASAAV LSSFPAPLQ 420  
SAVVINA VSP ABLTPKQVTI KPVATAFLPV SAVKTAGSQV INLKLANNTT VKATVISAAS 480  
VQSASSAIK AANAIOQQT VVPASSLANA KLVPKTVHLA NLNLLPQGAQ ATSELRQVLT 540  
KPKQKQKQAI ANAASQPPK KVSrvQVVSS LQSSVVEAFN KVLSSVNPVP VYINLSFPA 600  
NAGILPTRG YKCLEGDSF ALEKSLTQHY DRRSVRIEVT CNHCTKNL VF YNKCSSLSHA 660  
RGHEKEGVVM QCSHLILKP V PADQMIVSPS SNTSTSTSL QSPVGAGTHT VTKIQSGITG 720  
TVISAPSTP ITPAMPLED PSKLCRHSK CLECNVEFQD ETSLAHFQQ AADTSGQKTC 780  
TIQMLLPNQ CSYASHRIH QHKSPTTCE CGAICRSVHF QTHVTKNCLH YTRRVGFRVC 840  
HCNVVYSDVA ALKSHIQGSH CEVFKKPCIC PMAFKSAPST HSHAYTOHPG IKIGEPKITI 900  
KCSMCDTVFT LQTLTYRHFD QHIENQKVSF KCFDCSLLY AQKQLMMDHI KSMHGTLSKI 960  
EGFPNLGIN PLSIKPATQN SANQNKEDTK SMNGKEKLEK KSPSPVKKSM ETKKVASPGW 1020  
TCWECDCLFM QRDVYISHVR KEHGKQMKKH PCRQCDKSPS SSSHLCRHNR IKHKGRKVVY 1080  
ACSHCPDSRR TPTKRLMLK HVQLMHGIKD PLKEMTDAT NEEBTEIKED TKVPSPKRKL 1140  
EEFVLEFPFR RGATPQLKK LKINPVKVKH CAVCGFTTEN LLQFHEHPQ HKSDGSSYQC 1200  
REOGLCYTSH VLSLRHLFV HKLKEPQFVS KQNGAGEDNQ QENKPSHEDE SPDGA VSDRK 1260  
CKVCAKTFET EALNTHMRT HGMAFIKSKR MSSAEK

80

**SEQ ID NO:256 PBM1 DNA sequence**

Nucleic Acid Accession#: AF111847

Coding sequence: 58-1608 (underlined sequence corresponds to start and stop codon)

5 1 11 21 31 41 51  
 TTTTCGTGCGA CTCTTACCGG TTGGCTGGGC CAGCTGCCGC GCGGCTCACA GCTGACGATG 60  
 GGGGACCCCA GCAAGCAGGA CATCTTGACC ATCTTCAAGC GCTCCGCTC GGTGCCCACT 120  
 AACAAAGGTGT GTTTTGATTG TGGTGCCAAA AATCCCAAGC GGGCAAGCAT AACCTATGGA 180  
 GTGTTCCTTT GCATTGATTG CTCAGGGTCC CACCGGTAC TTGGTGTTC CTGAGTTT 240  
 ATTGATCTTA CAGAGTTGGA TTCCAACGTG TCATGGTTTC AGTTCGATG CATGCAAGTC 300  
 GGAGGAAACG CTAGTGCAATC TTCTTTTTC CATCAACATG GGTGTTCAC CAATGACACC 360  
 AATGCCAAGT ACAACAGTCG TGCTGCTCAG CTCTATAGGG AGAAAATCAA ATCGCTCGCC 420  
 TCTCAAGCAA CACGGAAGCA TGGCACTGAT CTGTGGCTTG ATAGTTGTGT GGTTCACCT 480  
 TTGTCCCTTC CACCAAGGA GGAAGATTTC TTGCTCTCTC ACGTTTCTCC TGAGGTGAGT 540  
 GACACAGCGT GGGCATCAGC AATAGCAGAA CCATCTTCTT TAACATCAAG GCCTGTGGAA 600  
 ACCACTTTGG AAAATATGGA AGGTGGACAA GAGCAAGGAC CAAGTGTGGA AGGTCTTAAT 660  
 GTACCAACAA AGGCTACTTT AGAGGTATCC TCTATCATAA AAAAGAAACC AATCAAGCT 720  
 AAAAAGGCC TTGGGCCCAA AAAAGGAAGT TTGGGAGCTC AGAACTGGC AAACACATGC 780  
 TTTAATGAAA GTGAAAAACA AGCTCAAGCT CCGGATAAAA TGAAGGAGCA GGAAGACCTG 840  
 GCCAAGGTGG TATCTAAAGA AGAATCAATT GTTTCATCAT TACGATTAGC CTATAGGAT 900  
 CTTGAATTC AAATGAAGA AGACGAAAG ATGAACATTA GTGGCAAAA AAATGTGAC 960  
 TCAGACAGAC TCGCATGGG ATTGGAAAT TGCAGAGTG TTAATTCACA TTCAGTGACT 1020  
 TCAGATATGC AGACCATAGA GCAGGAATCA CCCATTATGG CAAACCAAG AAAAAGTAT 1080  
 AATGATGACA GTGACGATTC ATATTTTACT TCCAGCTCAA GTTACTTTGA CGAGCCAGTC 1140  
 GAGTTAAGGA GCAGTCTTT CTCTAGCTGG GATGACAGTT CAGATTCCCTA TTGAAAAA 1200  
 GAGACCAGCA AAGATACTGA AACAGTCTG AAAACCCAG GCTATTGAGA CAGACCTACT 1260  
 GCTCCCGCA AGCCAGATTA TGAGCCAGTT GAAATACAG ATGAGGCCCA GAAGAAGTT 1320  
 GGCATATGCA AGGCCATTTC ATCAGATATG TATTTTGGAA GACAATCCCA GGCTGATTAT 1380  
 GAGACCAAGG CCGCCTAGA GAGGCTGTC GCAAGTTCCT CCATAAGCTC GGCTGATCTG 1440  
 TTCGAGGAGC CGAGGAAGCA GCCAGCAGGG AACTACAGCC TGTCCAGTGT GCTGCCCAAC 1500  
 GCCCCGAGCA TGGCGCAGT CAAGCAGGGA GTGAGATCGG TTGCTGAAA ACTCTCCGTC 1560  
 TTGTGTAATG GAGTCGTGAC TTCAATTCAG GATCGCTACG GTTCTTAATA CTGAAGTCAT 1620  
 GATGTGTATT TCCTTGAGAA ATTCTCTTT AAATGAACAA GTAACCATAT CTCAGGCCGC 1680  
 AGTGAAGTCC AGATAGTTTT CCAGATTGTT TTGCTACTTT TTCATATGCT ATATGTTTCT 1740  
 GATTTTAAAT ATTTCTTTTG AGAAATTCCT AGTTCTGATG TAGGAGCTTT CCTGTGATTT 1800  
 CTGTTTCAAG TCCTTCTCTG TCACACCTCT CTTTGGCGTC TCTGTGATA TCCTTGCTTT 1860  
 ATTTCTTTGG AACCTTGAT TTCAACACTG AGGGCCTGGA GAUCCCTGCT CCTCTGCTC 1920  
 CTGAACCAAG AGGCTTCATG TGGGGGAGGA GGAGAGGTCT CCATGTGACA CATGGGCTCA 1980  
 GGGCTGCCAG AATCAGCGGA TGCTGGATGG GCCTGCAGAA ACACACTCA CCACACACAC 2040  
 TTCTCTCAA AGACCAAAG TGACTGCTGT CTCGTGTGAC AGATTGCTTC ATTTATGTTT 2100  
 CTACATAGTA AGGTGACTGC CAAATAATAT TTGAAGTCAT CTGTCTCTTT GTAAATEATT 2160  
 TTATATGAGC TATAAATTTA AAAATGTTTT TCAGTGAGTG CTTTAAACAA ACTTAAGCTT 2220  
 CTGCGCTGCC AAGGGAATTA ATGTTATCTT GTGAAAGGTG TTGCTGTTTG AATTGATGAG 2280  
 AAATGGAGA TGAGAACTCC CTAAGAATTC TCATAATAAA TCATCTCATC ACAAAATCAAT 2340  
 ACGGTATACA GAGTTAAAGT GGAATGAGGT AAGAAGATAC AGCTACAGAA AATAGTTGCG 2400  
 TGTATGGCAG AACAGTCATT GTAATTGGGT AGTTTGTGTA ATAAATATT TTAATCTTG 2460  
 CTTTTCAGAA ATTACGAAAT GTGTATAAC AAATAAGAA AAATAATTTA GCTGTGTTTT 2520  
 AGACAGCATT AGAATATATT GTTCAGCACA GTAAATATA TTTGAAATTT GATAAGCCAA 2580  
 AAATGTGTTT TTGAATGAAT ATTTGTGAA TCTTCTTAA AAGCTCAAT TTGTAGACTT 2640  
 CTAAATAGAA TAAACACTTG CAGCAGAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA 2700  
 AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA 2760  
 AAAAAAAAAA AAAAAAAAAA AAAAAA

**SEQ ID NO:257 PBM1 Protein sequence**

PBM1 Protein sequence: CA976901

60 MGDPSKQDIL TIFKRLRSLV TNKVCFCGGA KNPSWASITY GVFLCIDCSG SHRSLGVHLS 60  
 65 FIRSTELDSN WSWFQLRCMQ VGGNASASSF FHQHGCTND TNAKYNSRAA QLYREKIKSL 120  
 ASQATRKHGT DLWLDSCVVP PLSPPPKEED FFASHVSFEV SDTAWASAJA EPSLTSRPV 180  
 ETILENNEGG QEQGPSVEGL NVPTKATLEV SSIKKKPNQ AKKGLGAKKG SLGAQKLANT 240  
 CFNEIKKQAO AADKMKEQED LAKVVSKEES IVSSLRLAYK DLEIQMKKDE KMNISGKKNV 300  
 65 DSDRLGMCFG NCRSVISHSV TSDMQTIEQE SPIMAKPRKK YNDSDDSYF TSSSSYFDEP 360  
 VELRSSFSF WDDSDSYWK KETSKDTETV LKTTGYSDRP TARRKPDYEP VENTDEAQKK 420  
 FGNVKAISD MYFGRQSQAD YETRARLERL SASSSISSAD LFEPRKQPA GNYLSLVLP 480  
 NAPDMAQFKQ GVRSVAGKLS VFANGVVTSI QDRYGS

**SEQ ID NO:258 PBM4 DNA sequence**

Nucleic Acid Accession#: D30891

Coding sequence: 1-4032 (underlined sequence corresponds to start and stop codon)

70 ATGGATACTG TCATGAAGCA GACACATGCT GACACACCTG TTGATCATTG TCTATCTGGC 60  
 75 ATAAGAAAGT ATGACAGCAC CTTAAGCTT AAAAGTGAAG TCAACAAGCA TGAACAGCC 120  
 CTTGAAATGC AGAATCCAAA TTTGAACAA AAAAGATGTT GTTTCACCTT TACGTTGAAT 180  
 GGAACCTCCA GAAAAATTAGA CCGTAGTGTG TTTACAGCAT ATGGTAAACC CAGCGAGAGT 240  
 ATCTACTACG CCGTAGTGTG TAATGACTAT TTCAGTGAAA GGATAAAGAA TCAGTTTAAT 300  
 80 AAGAACATTA TTGTTTATGA AGAAAAGACA ATAGATGGAC ATATAAATT AGGAATGCCT 360  
 CTCAGTGCC TGCTAGTGA TTCTCATTTT AAAATTACAT TTGTCAAAAG AAAGAGTAGC 420



5 AAAGAAGATG GACACATATT ACGCCAATGT GAAAAATCCAA ACATGGAATG CATTCTTTTT 480  
 CATGTTGTTG CTATAGGAAG GACAAGAAAG AAGATTGTTA AGATCAACGA ACTTCATGAA 540  
 AAAGGAAGTA AACITTTGTAT TTATGCCCTG AAGGGTGAGA CTATTGAAAGG AGCCTTATGC 600  
 10 AAGGATGGCC GTTTTCGGTC TGACATAGGT GAATTTGAAT GGAAACTAAA GGAAGGTCAT 660  
 AAGAAAAATTT ATGGAAAAACA GTCCATGGTG GATGAAAGTAT CTGGAAAAAGT CTAGAAAAATG 720  
 GACATTTCAA AAAAAAAGC ATTACAACAG AAAGATATCC ATAAAAAAT TAAACAGAAT 780  
 GAAAGTGCCA CTGATGAAAT TAATCACCAG AGTCTGATAC AGTCTAAGAA AAAAGTCCAC 840  
 AAACCAAAGA AAGATGGAGA GACCAAGATG GTAGAACAAC GCAGAGAGCA AATTCTCCCA 900  
 15 CCTCAGGTGT TAAGCCATTA TATTAAAGAT AAAACTCGCC AGACAAATCC CAGGATTAGA 960  
 AATTATTACT TTGTAGTTT GCCCCGAAAA TATAGGCAAA TAACTCACA AGTTAGACGG 1020  
 AGGCCGCATC TGGGTAGGCG GTATGCTATT AATCTGGATG TCCAAAAGGA GGCAATTAAT 1080  
 CTCTTAAAGA ATTATCAAAAT GTTGAATGAA GCCATAATGC ATCAGTATCC GAATTTTAAA 1140  
 GAGGAGGCAC AGTGGGTAAAG AAAATATTTT CGGGAAGAAC AAAAGAGAAT GAATCTTTCA 1200  
 20 CCAGCTAAGC AATTCAACAT ATATAAAAAG GACTTCGGAA AAATGACTGC AAATCTGTT 1260  
 TCAGTTGCAA CCTGCGAACA GCITACATAT TATAGCAAGT CAGTTGGGTT CATGCAATGG 1320  
 GACAATAATG GAAACACAGG TAATGCTACT TGCTTTGTCT TCAATGGTGG TTATATTTT 1380  
 ACCTGTGAC ATGTGTGACA TCTTATGGTG GGTAAAAACA CACATCCAAG TTTGTGGCCA 1440  
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 25 GACAAATGGT TTCCATTGA GCCATGGCTT AAAGTGTCCA ATGAAAAATCT AGATTATGCC 1560  
 ATTTTAAAAA TAAAGAAAAA TGGAAATGCG TTCTCTCCAG GACTATGGCG ACAGATTICT 1620  
 CCTCAACCAT CTACTGGTTT GATTTATTTA ATTTGTCATC CTGAAGGCCA GATCAAGAAA 1680  
 ATAGATGGTT GTACTGTGAT TCTCTAAAC GAACGATTGA AAAAAATCC AAACGATTGT 1740  
 CAAGATGGGT TGGTAGATCT CTATGATACC ACCAGTAATG TATACTGTAT GTTTACCCAA 1800  
 AGAAGTTTCT TATCAGAGGT TTGGAACACA CACACGCTTA GTTATGATAC TTGTTCTCT 1860  
 30 GATGGGTCTT CAGGCTCCCC AGTGTTTAAT GCATCTGGCA AATTGGTTCG TTGTCATACC 1920  
 TTGGGCTTTT TTATCAACG AGGATTTAAT GTGCATGCC TTATTGAAT TGGTATTCT 1980  
 ATGGATTCTA TTCTTTGTGA TATTAAAAAG ACAAATGAGA GCTTGATAA ATCATTAAAT 2040  
 GATGAGAAAC TTGAGACCTA CGATGAAGAG AAAGCCCGCG CCAGGCCAGC CTACCGGCGA 2100  
 CTAGGATGCT TTGCTTTTGG CTCTCGCTTT CCAATACTCG GGACTGGGGA AACCGGGA 2160  
 35 ATAGAAGCAG GCAAGGACCG CGGTGGGCAC GGGGTCAAGT AGACAGGGTC CTGCTCGCGG 2220  
 CGTCAAGGAG GAGCGCTGTG GGTGTCCCA GCGCAGCCAA TCGGCTTCG AAGTAGCTGG 2280  
 AGCTCTGGAG CCTTGTCTTC CTCAAATACG AGCGGGAAC GCGTTGAGCG CTGGATTCCA 2340  
 GGCAGAGTGC TGGCGAGGCG CGCAGTCTCT AAAGAGCAAC AGAATAATG CAGTACTTCT 2400  
 40 CTAATGAGGA TGGAGTCTAG AGGAGACCCA AGAGCCACAA CTAATACCCA GGCTCAAAGA 2460  
 TTCCATTAC CTAAGAAAAA TCCAGAAGAC CAGACCATGC CCAAAATAG GACAATATAT 2520  
 GTTCACTTGA AGGCTGTGAG AAAAGAGATA GAAACTCACC AAGGCCAAGA AATGCTTTG 2580  
 CGTGGCAGAG AAGGAATCAA AGAGTACATA AACCTTGGAA TGCCCTCAG TTGTTTCCCT 2640  
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 50 ACCTGTGTGT TGAGAGAACAA AATCGTGCT CAGTACCCCA GTTTGAAAAAG AGAAAGTGAA 3120  
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 TTGCATAGAA CAAGCTTTGG GAAAGTAACA AAAAATCTCT CTTCGATTAA AGTAGTGAAA 3240  
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 55 AGCATTGTGG GAGACGGAAT AGAGCCAAGT AAGTGGGCAA CCATAATGG TCAATGTGTA 3420  
 AGGGTGACAT TTGTTATGTA AGAGCTAAAA GACAAGGAAA CAACTACTT TTTTGTGAA 3480  
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 ATACATATTA TTGGCCATCC ATATGGAGAA AAAAAGCAGA TTGATGCTTG TGCTGTGATC 3660  
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 CCAGAGTATG TCCATATGTA TACTCAAAGA AGTTTCAGAA AAATAGTTCA CAACCTGAT 3780  
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 AAAAGTTTAT TGTGGGCCAT GCATGCTGCT GGCTTTGCTT ATACTTACCA AAATGAGACT 3900  
 65 CGTAGTATCA TTGAGTTTGG CTACCATG GAATCCATCC TCTTGATAT TAAGCAAAGA 3960  
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 GAGGACTTGT GAGAAATTCAG TCTACTGGAT TTAAGGGAAT GGCTTATGGA GTTGTATT 4080  
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 70 AITGACCAT TCTATCTGC CAGGCATTTT TCTAAGCACA TGAAGAAATT AGTCTAACA 4200  
 AACTATGAG ATGGACTATA ACTTGCCCAA ATTTTITTTT TTTTGTGAGC TGAGTCTCAC 4260  
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 CCACACCCAG CTAATTTTTT TTTTITTTT TGTATTTTA GTAGAGACAG GGTTCACCA 4440  
 75 TGTGTGTCAG GCGGGTCTCG AACTCTGAC CTCGTGATCC ACGTGCCTCG GCTTCCAAA 4500  
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 ACTCCAATA TTAATGTTAT GTATTTCTCA TTGTTTACT TCTCATGGT ATTATGAAGA 5040  
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 ATCTGTTTC CATTTCCATT GCAATACTAC TAAAGCCATA CAATATCAAG CACCCTCCT 5160

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 GGGGTCCAGT GTAGGAAAAC AGCCTGTTGC ATTGTAAGAG TGATGTCACC TTGAAGAGCA 5280  
 GCTGGCATGA TGACTGCTGT TGAACCTCG CATACCAAGA TATTCTGCAG CAATGTCTTT 5340  
 5 AAACAGTGCC GGTAGTACAG ATAACCCCTC ATAAAGATGC TTATCTAACC TCCCAGTGT 5400  
 TCAGGTGTTT CACAAGAAAG TCTGAGATAT GACTAGCTAC ACGTTTGGC AAAAATGCTT 5460  
 GTTATATAA GGGTACTTTT GGGAGGGTGA GTGCCCCAT TTATGGTGT CTAGAAACAT 5520  
 TGCTTCTGTT TGTAAGTTCC TATTAAATGT TCTTCTGAG AAAAAAAAAA A

10 SEQ ID NO:259 PBM4 Protein sequence:  
 PBM4 Protein sequence: BAB67788

MDTVMKQTHA DTPVDHCLSG IRKCSSTFKL KSEVNHKETA LEMQNPNLNN KEOCFTFTLN 60  
 GNSRKLDRSV FTAYGKPSSES IYSALSANDY FSEIKNQFN KNIIVYEKT IDGHINLGMP 120  
 15 LKCLPSDSHF KITFGQKSS KEDGHILRQC ENPNMECLF HVVAIGRTRK KIVKINELHE 180  
 KGSKLCTIAL KGETIEGALC KDGRFRSDIG EFWKLKEGH KKIYGKQSMV DEVSGKVLEM 240  
 DISKSKALQQ KDHKKIKQN ESATDEINHQ SLIQSKKKVH KPKKDGETKD VEHSREQILP 300  
 PQDLSHYKD KTRQTPRIR NYFYCSLPRK YRQINSQVRR RPHLGRRYAI NLDVQKEAIN 360  
 20 LLKNYQTLNE AIMHQYPNFK EEAQWVRKYF REEQKRMNLS PAKQFNIVYK DRGKMTANSV 420  
 SVATCEQLTY YKSVGFMQW DNNNGTGNAT CFVNGGYIF TCRHVHLMV GKNTHPSLWP 480  
 DIISKCAKVT FTYTEFCPT DNWFSIEPW KVSNEILDYA ILKLKENGNA FPPGLWRQIS 540  
 PQSTGLIYL IGHPEGQIKK IDGCTVIPLN ERLKYPNDC QDGLVDLYDT TSNVYCMFTQ 600  
 RSFLSEVWNT HTLSYDTCFS DGSSGSPVFN ASGKLVALHT FGLFYQRFN VHAIIEFGYS 660  
 25 MDSILCDIKK TNEISLYKSLN DEKLETYDEE KARPRPAYRR LGCFRFRSRF PILGTGETGR 720  
 IEAGKDRRGH GVSETGSCSR RQGGALWVSP AQPIGRSSW SSGAFASNT SGNCVERWIP 780  
 GRVLARRAVS KEQNNCSTS LMRMESRQDP RATINTQQR FHSPPKNPED QTMPQNRITY 840  
 VTLKAVRKEI ETHQGEMLV RGTGIEKEYI NLGMPLSCFP EGGQVVITFS QSKSKQKEDN 900  
 HIFGRQDKAS TECVKFYIHA IGIGKCKRRI VKCGKLHKKG RKLGVYAFKG ETIKDALCKD 960  
 30 GRFLSFLND DWKLIENNDT ILESTQVDE LEGRYFQVE EKRMPVSAAS SQNPSEKRN 1020  
 TCVLREQIVA QYPSLKRESE KIENFKKKM KVKNGETLFE LHRTIFGKVT KNSSSIKVVK 1080  
 LLVRLSDSVG YLFWDSATTG YATCFVFKGL FILTCRHVD SVGDGIEPS KWATIGQCV 1140  
 RVTFGYEELK DKETNYFFVE PWFIEHNEEL DYAVLKLKEN GQQVPMELYN GITPVPLSL 1200  
 35 IHHIHPYGE KQIDACAVI PQGQRAKKCQ ERVQSKKAS PEYVHMYTOR SFQKIVHNPD 1260  
 VITYDTEFF GASGSPVFD S KGSVLAMHAA GFAYTYQNET RSIEFGSTM ESILLDIKQR 1320  
 HKPWYEEVFV NQQDVEMMSD EDL

40 SEQ ID NO:260 PBQ1 DNA sequence  
 Nucleic Acid Accession#: NM\_015642  
 Coding sequence: 489-2489 (underlined sequence corresponds to start and stop codon)

	1	11	21	31	41	51	
45	ACATTTCAAA	AAAAATACAT	AGACTGATGT	TTCAGACTTG	TGCAGCATAA	GCCTACAGGG	60
	TACAGAGAA	GAACCTCTAG	AATGTTTGA	GAATGTTTCA	TCATTACTAA	CAGGATATTC	120
	CTCATGACAT	TGCTGTCTGA	TCTTTGACCA	TCAGTCTGTG	ACCTGCCCTT	TCTCTTACA	180
	TGCAGCGCT	CTCTGCTCC	TGCCCCAATG	AACATCTGCA	CTAGGCCCAA	GCCTTGGAGT	240
50	AATTTACTCT	AAGAGTGACA	CCATTGATTT	TGAAACTACT	GAAGAAACCC	AAGACAGCTG	300
	AAAACACAG	GGCATCTGAG	GAGAAATGAGA	TTACTCAGCC	GGGTGGATCC	AGCGCCAAAG	360
	CGGCGCTCC	TGCTCTGAAC	TTTGAAGCTG	TTTGTCTCC	AGACCCAGCC	CTCATCCACT	420
	CAACACATC	ACTGACAAAC	TCTCACGCTC	ACACCGGCTC	ATCTGATGTG	GACATCAGTT	480
	GCAAGGGGAT	GACCGAGCGC	ATTACAGCA	TCAACCTTCA	CAACTTCAGC	AATTCGGTGC	540
	TCGAGACCT	CAACGAGCAG	CGCAACCGTG	GCCACTTCTG	TGACGTAAAG	GTGCGCATCC	600
55	ACGGGAGCAT	GCTGCGCGCA	CACCGCTGCG	TGCTGGCAGC	CGGCGAGCCC	TTCTTCCAGG	660
	ACAAATCTGT	GCTTGGCTAC	AGCGACATCG	AGATCCCGTC	GGTGGTGTCA	GTGCAGTCAG	720
	TGCAAAAGCT	CAITGACTTC	ATGTACAGCG	GCGTGCTACG	GGTCTCGCAG	TCGGAAGCTC	780
	TGCAGATCCT	CACGCGCGCC	AGCATCTCTG	AGATCAAAAC	AGTCATCGAC	GAGTGCACGC	840
	GCATCGTGT	ACAGAACGTG	GGCGATGTGT	TCCCGGGGAT	CCAGGACTCG	GGCCAGGACA	900
60	CGCCGCGGG	CACTCCCGAG	TCAGGCACGT	CAGGCCAGAG	CAGCGACACG	GAGTCGGGCT	960
	ACCTGCAGAG	CAACCCACAG	CACAGCGTGG	ACAGGATCTA	CTCGGCACTC	TACGCGTGT	1020
	CCATGCAGAA	TGGCAGCGGC	GAGCGCTCTT	TTTACAGCGG	CGCAGTGGTC	AGCCACACAG	1080
	AGACTGCGCT	CGGCTGCGCC	CGCGACCAAC	ACATGGAAGA	CCCCAGCTGG	ATCACACGCA	1140
	TCCATGAGCG	CTCGCAGCAG	ATGGAGCGCT	ACCTGTCCAC	CACCCCGGAG	ACCACGCACT	1200
65	GCCGCAAGCA	GCCCCGGCCT	GTGCGCATCC	AGACCTAGT	GGGCAACATC	CACATCAAGC	1260
	AGGAGATGGA	GGACGATTAC	GACTACTACG	GGCAGCAAG	GGTGCAATC	CTGGAACGCA	1320
	ACGAATCCGA	GGAGTGACAG	GAAGACACAG	ACCAGGCCGA	GGGACCCGAG	AGTGAGCCCA	1380
	AAGGTGAAAG	CTTCGACTCG	GGCGTCAGCT	CCTCCATAGG	CACCGAGCCT	GACTCGGTGG	1440
	AGCAGCAGTT	TGGGCTGGGG	GCGGCGCGGG	ACAGCCAGCG	TGAACCCACC	CAACCCGAGC	1500
70	AGGCTCAGAA	AGCCCCCGCT	GAGGCTGGCT	CGCAGACAAA	CACAGTAGAA	ACAGGTGCTT	1560
	CCTCTCCGGA	GAGAAGCAAT	GAAGTGGAGA	TGGACAGCAC	TGTTATCACT	GTACGACACA	1620
	GCTCCGACAA	GAGCGTCTTA	CAACAGCCTT	CGGTCAACAC	GTCCATCGGG	CAGCCATTGC	1680
	CAAGTACCCA	GCTCTACTTA	CGCCAGACAG	AAACCCCTAC	CAGCAACCTG	AGGATGCCTC	1740
	TGACCTTGAG	CAGCAACACG	CAGGTCAATT	GCACAGCTGG	CAACACCTAC	CTGCGAGCCC	1800
75	TCTTCTACTC	CCAGCCCGCG	GGCAGTGGCC	CCAAGCCTTT	CTCTTTCAGC	CTGCCACAGC	1860
	CCCTTGGCAG	CCAGCAGACC	CAGTTTGTGA	CAGTGTCCCA	GCCCGGTCTG	TCGACCTTTA	1920
	CTGCACAGCT	GCCAGCGCCA	CAGCCCTTGG	CCTCATCCGC	AGGCCACAGC	ACAGCCAGTG	1980
	GGCAAGGCGA	AAAAAGGCTT	TATGAGTGCA	CTCTCTGCAA	CAGACTTTC	ACCGCCAAAC	2040
	AGAACTACCT	CAAGCACATG	TTCTGTACACA	CAGGTGAGAA	GCCCCACCAA	TGCAGCATCT	2100
80	GTGGGCGCTC	CTTCTCTCTA	AAGGATTACC	TTATCAAGCA	CATGTTGACA	CACACAGGAG	2160

5 TGAGGGCATA CCACTGTAGT ATCTGCAACA AGCGCTTCAC CCAGAAGAGC TCCCTCAACG 2220  
 TGCACATGCG CCTCCACCGG GGAGAGAAAT CCTACGAGTG CTACATCTGC AAAAAGAAAT 2280  
 TCTCTACAA GACCTCCTTG GAGCGACACG TGGCCCTGCA CAGTGCCAGC AATGGGACCC 2340  
 CCCTGACAG CACACCCCCA GGTGCCCGCG CTGGCCCCCC AGGCGTGGTG GCGTGCACGG 2400  
 AGGGGACCAC TTACGCTGCG TCCGTCTGCC CAGCAAAGTT TGACCAAAATC GAGCAGTTCA 2460  
 ACGACACAT GAGGATGCAT GTGCTGACG GATAAGTAGT ATCTTTCTCT CTTCCTTATG 2520  
 AACAAACAA AACACAACA AAAACAACAA AACAAAAAA GCTATGGCAC TAGAATTAA 2580  
 GAAATGTTTT GGTTCATTT TTAATTTCTG TTTTGTGTTT TGTTTCGTTT CATTTTGTAC 2640  
 10 TACATGAAGA ACTGTTTTT GCCTGCTGCT ACATTTACAT TCCGGAGGCT TGGGTGAATA 2700  
 ATAGTTTTTC CAGTCTCCCT CGGATGGTGG CCTTAAGGCC TGGTAGTGCT TCAAGAGGTC 2760  
 CACTGGTTGG ATCTCTAGCT ACTGGCCTCT AAATACAACC CTTCCTTACA AAAAAAAA 2820  
 AAAAAAAA

15 SEQ ID NO:261 PBQ1 Protein sequence:  
 PBQ1 Protein sequence: NP\_056457

20 MTERIHSINL HNFNSVLET LNEQRNRGHF CDVTVRIHGS MLRAHRCVLA AGSPFFQDKL 60  
 LLGYSDIEP SVVSQSVQK LIDFMYSGVL RVQSSEALQI LTAASLIQK TVIDECRIV 120  
 SQNVGDVFP IQDSGQDTPR GTPESGTSQ SDDTESGYLQ SHPOHSVDR YSALYACSMQ 180  
 NGSGERSFYS GAVVSHHETA LGLPRDHHME DPSWTRHIE RSQOMERYLS TTPETHCRK 240  
 QPRFVRIQL VGNHRIKQEM EDDYDYGYQQ RVQILERNES EECTEDIDQA EGTSEFPKGE 300  
 SFDSGVSSSI GTEFDSVEQQ FGPGAARDSQ AEPQPEQAA EAPAEGGPQT NQLETGASSP 360  
 25 ERSNEVEMDS TVITVNSSD KSVLQQPSVN TSIGQPLPT QLYLRQTEIL TSNLRMPLTL 420  
 TSNTQVIGTA GNTYLPALFT TQPAGSGFKP FLFSLPQLA GQQTQFVTVS QPLSTFTAQ 480  
 LPAPQPLASS AGHSTASQGG EKKPYECILC NKTFTAKQNY VKHMFVHTGE KPHQCSCICWR 540  
 SFSLKDYLIK HMVTHTGVR YQCSICNKR FQKSSLNVM RLHRGEKSYE CYICKKKFSH 600  
 KTLERHVAL HSASNGTTPA GTPPGARAGP PGVVACTEGT TVYCVCPAK FDQIEQFNDH 660  
 30 MRMHVSDG

35 SEQ ID NO: 262 PBQ6 DNA sequence  
 Nucleic Acid Accession#: AF654187  
 Coding sequence: 1-912 (underlined sequence corresponds to start and stop codon)

40 1 11 21 31 41 51  
 | | | | |  
 ATGGTGAAG AGGAAACAGG CATATCTTAC ATGGTGGCAG ACAAGGGACA CCGTCTTACA 60  
 AACTCTACCA CTCTCGCGCC GTCGTTTCGA CCATATAAAA ACGACCTATG CGAACTGCGT 120  
 CGGAAAACCT CCTCAGCATG TAAAACGAAG ATCAGGAGCA GATTGGAAGA ATTACAAAGT 180  
 GAATGTGTC CAGTCAGCAT GTCAGAGACA GACCACATAG CCTCTACTTC CTCTGATAAA 240  
 AATGTGTGGG AAACACCTGA ATTAAAGGAA GACTCATGCA ACTTGTGTTT TGGCAATGAA 300  
 AGCAGCAAT TAGAAAATGA GTCCAAACTA TTGTCAITTA ACTCTGATAA AACTTTATGT 360  
 CAACCTAATG AGCATAATAA TCGAATTGAA GCCCAGGAAA ATTATATTCC AGATCATGGT 420  
 45 GGAGGTGAGG ATTCTTGTGC CAAAACAGAC ACAGGCTCAG AAAATTCTGA ACAAATAGCT 480  
 AATTTTCTTA GTGGAATTT TGCTAAACAT ATTTCAAAAA CAAATGAARC AGACAGAGAA 540  
 GTAACACAAA TATTGGTGGA ATTAAGGTCA TCTACATTTC CAGAAATCAGC TAATGAAAAG 600  
 ACTTATTCAG AAAGCCCTTA TGATACAGAC TGCACCAAGA AATTATTTTC AAAAATAAAG 660  
 AGCGTTTCAG CATCAGAGGA TTTGTTGGAA GAAATAGAA CTGAGCTCTT ATCTACGGAG 720  
 50 TTTGCAGAAC ATCGAGTACC AAATGGAATG AATAGGGGAG AACATGCATT AGTCTGTTTT 780  
 GAAAAGTGTG TGCAGATAAA ATATTTCGAG CAGGAACATA TCATAAAAAA GGCCAGACTT 840  
 GGTCTCTGTT ATTTGCCATC AAGAACCCTCA ATTGACACGT TAATCCGTT TATCCCAAT 900  
 TTATATAGAT AA

55 SEQ ID NO:263 PBQ6 Protein sequence:  
 Protein Accession #: NP\_060170

60 MEPKEATGKE NMVTKKKNLA FLRSRLYMLE RRTKDTVVES SVSGDHSGL RRSQSDRTEY 60  
 NQKLQEKMTQ QGECSVAETL TPREEHHMKR MMAKREKIK ELIQTEKDYI NDLELCVREV 120  
 VQPLRNKKT DLDVDSLFSN IESVHQISAK LLSLEEATT DVEPAMQVIG EVFLQIKOPL 180  
 EDIYKIYCYH HDEAHSILES YEKEELKEH LSHCIQSLK

65 SEQ ID NO:264 PBQ7 DNA sequence  
 Nucleic Acid Accession#: NM\_014323  
 Coding sequence: 662-2725 (underlined sequence corresponds to start and stop codon)

70 1 11 21 31 41 51  
 | | | | |  
 GGGCCTACTC TGCCGCGCGCC GCGCGCCGCC CGCTCCAGCC GCGCGCGCGC CCGCCACCGC 60  
 CTTCCAGGCT CCGGACCCG GCGCGCGCCA CCGCCCCCGT GCGCGCGCGC CCGCCGCGCG 120  
 CTTCGCTTTC GCTTTTGTG TCTCCGCTC CGGCGCGCCC GCGCGCGCTC GCGCTTTGCA 180  
 75 GGGGACGAGC CGCGCGCCCC CAGCGGGCCC GGGAAAAGCC GCGCGCGCGC CCGCGCGCTG 240  
 CGCGCGGAGC CCTCTTCTT CTTCCCGCGG TCGCGGTGCC CTCTCTGGCT GCGCGCGCGC 300  
 GCGCTCTGCG GCGCGGAGG GAGGTGGCA GCGCGTTTG CAGGAGGGGC GCACCTCTTC 360  
 GCTCGCGCAC CCCCCGGAA GGTAGACCGG GAAGGGGAGG CCGCGCGCGC GAGAGGAGAG 420  
 AGTGGCGCGC AGTCCAGCGA GGGCGGGGGT TGGCTATGTG GGGGTGGTGC CACCCCGCAG 480  
 80 TCTAGACAGT CTGATCCGGG CTGGGGCGGT GTACACTCGG CGCACTCGCG AGACTACAGA 540  
 GCTCGGGGCC GGCACGTGTG GGGAGTGTGG ACACGCTTGC TCGCGCCCCG TTCTCGCTGC 600

5 TGAGGGGAAG GGAGGGGGCG GGCAGGTGCA GCGGCCGGGC TAGTGGGAGG GGGCGGCGGC 660  
 CATGGAGCGG GTGAACGACG CTTCGTGCGG CCGGTCTGGC TGCTACACAT ACCAGGTGAG 720  
 CAGACACAGC ACAGGAGATG TGCACAACTT GAACAGCAG CGCAAAAACG GCGGGCGCTT 780  
 CTGCGACGTG CTCTTGCGGG TAGGCGACGA GAGCTTCCCA GCGCACCGCG CCGTGTCTGC 840  
 CGCCTGCAGC GAGTACTTTG AGTCGGTGT CAGCGCCAG TTGGCGGACG GCGGAGCTGC 900  
 GGACGGGGGT CCGGCTGATG TAGGGGGCGC GACGGCAGCA CCAGGCGGCG GGGCGGGGG 960  
 CAGCGGGGAG CTGAGATGTC AACTATCAG CTCGAAGTA TTTGGGGACA TTCTGGACTT 1020  
 CGCCTACACT TCCCACATCG TGGTGCCTT GGAGAGCTTT CCGGAACCTA TGACGGCGCG 1080  
 10 CAGATTCTCG CTGATGAGGT CGGTATTCGA GATCTGCCAG GAAGTCATCA AACAGTCCAA 1140  
 CGTACAGATC CTGTACCCCT CTGCCCGCGC CGATATAATG CTCTTTCGCC CCGCTGGGAC 1200  
 CTGCGACTTG GGCTTCCCTT TGGACATGAC CAACGGGGCA GCCTTGGCAG CCAACAGCAA 1260  
 TGGCATCGCC GGACGATGTC AGCCAGAGGA GGAGGCGACT CCGGCGGCTG GTGCAGCCAT 1320  
 TGCAGGCCAA GCCTCTTTGC CTGTGTTACC TGGGGTGGAC CGCTTGCCCA TGGTGGCTGG 1380  
 15 ACCCCTATCC CCCCACCTGC TGACTTCCCTT ATTCGCCAGT GTGGCATCCA GTGCCCTCTC 1440  
 CCTGACTGGC AAGCGAGGCC GGGGCGGCCC AAGGAAGGCC AACTGTCTGG ACTCAATGTT 1500  
 TGGGTCCCCA GGGGGCTTGA GGGAGGCAGG CATCTCTCCA TGCGGTCTAT GTGTAAGGT 1560  
 GTTCACTGAT CGCAACCGGC TCCGGCAGCA CGAGGCCAG CACGGTGTCA CCAGCTTCCA 1620  
 GCTGGGCTAC ATCGACCTTC CTCTCCGAG GCTGGGTGAG AATGGGCTAC CCATCTCTGA 1680  
 20 AGACCCCGAC GSCCCCGAA AGAGGAGCCG GACCAGGAAG CAGGTGGCTT GTGAGTCTG 1740  
 CGGCAAGATC TTCCGTGATG TGTATCATCT TAACCGGCAC AAGCTGTCCC ACTCTGGGGA 1800  
 GAAGCCCTAC TCCTGCTCTG TGTGTGGGT GCGGTTCAG AGAAAGACC GCATGTCTTA 1860  
 CCATGTGCGG TCCCATGATG GGTCCGTGGG GAAGCCTTAC ATCTGCCAGA GCTGTGGGAA 1920  
 AGGCTTCTOC AGGCTGATC ACTTGAACGG ACATATCAAG CAGGTGCACA CTCTGAGCG 1980  
 25 GCCTCACAAG TGTGACCTT GCAATGCTTC TTTTGCCACC CGAGACCGTC TGCCTTCCA 2040  
 CCTGGCCTGT CATGAAGACA AGGTGCCCTG CCAGGTGTGT GGGAACTACT TCGGGCGAGC 2100  
 ATACATGACA GACCACCTGA AGAAGCAGC CGAGGGGCCC AGCAACTTCT GCAGTATCTG 2160  
 TAACCGGAGT TTCTCCTCTG CCTCCTACTT AAAGGTCCAT GTTAAACACC ACCACGGTGT 2220  
 TCCCTTCC CAGGTCTCCA GGCACAGGA GCCCATCTGT AATGGGGAG CAGCGTTCCT 2280  
 30 CTGCGCCAGG ACCTATGGCA ACAAGAAGG CCAGAAATGC TCACATCAGG ATCCGATTGA 2340  
 GAGCTCTGAC TTCTATGGTG ACCTCTCAGA TGCCAGCGAC CTGAAGACGC CAGAGAAGCA 2400  
 GAGTGCCAA GTCTCTTTCT CCTGCGACAT GGCAGTCCCT AAAAACAAAA TGGAGTCTGA 2460  
 TGGGAGAGAG AAGTACCCAT GCCCTGAATG TGGGAGCTTC TTCCGCTCTA AGTCTACTTT 2520  
 GAACAAACAC ATCCAGAGAG TGCAATGCTG GGCTCTCGGG GGGCCCTCTG GGGAGCTGGG 2580  
 35 CCGTGGCCTT GGCTGACCTT TCTCTCTCA CGAGAACATG TCTCTCTCG AGTCTCTTGG 2640  
 GTTTCAGATT GTTCAGTCGG CATTTGCGTC ATCTTTAGTA GATCCTGAGG TTGACCAGCA 2700  
 GCGCATGAGG CTGAAGGGA AATGAGGAG CTGCTGTGTC CCCACGAAA CAACCATCTG 2760  
 GGGACTGCTG GGAATGCTG TGAATGCGGA GGGAAATGAT GTTTGGGTTT TGTAGCTGAG 2820  
 AGATTCTTAT TCATTCTTAA CTGCCCCCA ACCCCACTCC AACTCTTCTT CCACCACCCA 2880  
 40 TTCTCCCAAT GGTCTTTAGA AATAGATTMT CATCTGATAT TCTGCAGAAA TATCAATGAG 2940  
 ACTTGGTATG GGACAGGGGC AGAAACACT ACATAGGCTT CCAAGGCAAA ACCAGTCCCA 3000  
 GTTCTCTTAA TGGGAGAGAG CTGGAATGCC TGGTGCTCAA TTCTTAGTGA CCCCATCTCT 3060  
 ATACCCAAAT CTATGATATT CTGGGACCTC AGTGATTTTG GTCCCTCTCC ACTTCTCTAG 3120  
 TTGCTCATCC TCCCTTCCCA TATCCTTCAA AAGAACCACA CTAGGCTCTC CACCTACTTA 3180  
 45 TACATGCGG ATGCCCACT GTTTTAAAGG AAGCCAGAAG CATCCATGG ACCATGGGGT 3240  
 GAGTGTCTCT CAGAGGCCCC CTGAGCTCAG CCTCTGCTCT GGAGGGCTCC AGACCTTTCT 3300  
 GAGCCCTCTC TGGAGGGGAG CATTTTCACT GCTAGGACAA GCTCAGCTGT TGAGGACACC 3360  
 CCCCACCCAA ATTTCAGTTC TTACGTGATT TTAACCATTC AACATGCTGT TGGGTTTAA 3420  
 50 TTCTCTAATT ATTATATTA TTGTTATAT TTTTTAGGAC CAGTTGTAGT GAATGCTAC 3480  
 TGAAGCTAT CCGAGGTGAT ACAGAGCTCT TTGTAAACCG CAGTCACACA TTAGGGTTAG 3540  
 TATTAAACTT TGTTTAGATG TACCATAATT AACTTGGCTA GTTGATTGTT TGAAGTCTAT 3600  
 GGAAGAAATA GTTTTATGCA AATTTTAA AAATGCCAGT CTGGTCAGGG AAGTAGGGGG 3660  
 TTTCAATGCT GTTGGGAACC AGGAAGGTGG GACAGCCGGC AGGTAGGGAG ATTGTGTACC 3720  
 55 TCAGTTGTGT CACATGTGAG CAAGCCAGG TTGACCTTGT GATGTGAATT GATCTGATCA 3780  
 GACTGTATTA AAAATGTAG TACATTACTC TA

## SEQ ID NO:265 PB7 Protein sequence:

Protein Accession #: NP\_114439

60 MERVNDASCG PSQCYTYQVS RHSTEMLHNL NQQRKNGGRF CDVLLRVGDE SFPRAHRAVLA 60  
 ACSEYFESVF SAQLGDGGAA DGGPADVGA TAAPGGGAGG SRELEMTIS SKVFGDILDF 120  
 AYTSRIVVRL ESFPELMTAA KFLLMRSVIE ICQEVIKQSN VQILVPPARA DIMLFRPPGT 180  
 SDLGIFLDMT NGAALAANSN GIAGSMQPEE EAARAAGAAI AGQASLPVLP GVDRLPMVAG 240  
 65 PLSPQLLTSP FPSVASSAPP LTGKRGRGRP RKANLLDSMF GSPGGLREAG ILPCGLCGVK 300  
 FTDANRLRQH EAQHGVTSLQ LGYIDLPPPR LGENGLPISE DPDGPRKRSR TRKQVACEIC 360  
 GKIFRDVYHL NRHKLSHSGE KPYSCPVCGL RFKRKDRMSY HVRSHDGSVG KPYICQSCGK 420  
 GFSRPDLHNG HIKQVHTSER PHKQCTCNAS FATRDRLRSH LACHEDKVPC QVCGKYLRAA 480  
 YMADELKKHS EGPSNFCIS NREGQKCSHQ DPESSDSYG DLSADSLKT PEKQSANSGF 540  
 70 SCDMAVPKKN MESDGEKKYP CPEGGFFRS KSYLNKHQK VHVRLGGPL GDLGALGSP 600  
 FSPQNMNLL ESFGQIVQS AFASSLVDFE VDQPMMPGEG K

## SEQ ID NO:268 PB9 DNA sequence

Nucleic Acid Accession#: NM\_012429

Coding sequence: 174-1385 (underlined sequence corresponds to start and stop codon)

75 1 11 21 31 41 51  
 | | | | |  
 CCCTACTCCG CCTCTCGGGA TCCTTTAAGA GCGGGGGCTT GGCTGCCAGC TCCGCGGGCC 60  
 80 GGGCAAAAGG CTGGGACTTT ACTCCGGGTG GCGGCGAGGA CGAGTCTGTG CTCCATCAGC 120

5 TGCCGCAACC GCGGCTCC GCGCCCAAC CCATCCCG CGGTGAGCC ACGATGAGCG 180  
 GCAGAGTCGG CGATCTGAGC CCCAGGCAGA AGGAGGCATT GGCCAAGTTT CCGGAGAATG 240  
 TCCAGGATGT GCTGCCGGCC CTGCCGAATC CAGATGACTA TTTCTCCTG CGTTGGCTCC 300  
 GAGCCAGAA GCTTCGAGCTG CAGAAGTCGG AGGCCATGCT CCGGAAGCAT GTGGAGTTCC 360  
 GAAAGCAAAA GACACATTGAC AACATCATTA GCTGGCAGCC TCAGAGGTG ATCCAACAGT 420  
 ATCTGTGAGG GGGTATGTGT GGTATGACC TGGATGGCTG CCGAGTCTGG TACGACATAA 480  
 TTGGACCTCT GATGCCAAG GGTCTGCTGT TCTCAGCCTC CAAACAGGAC CTGCTGAGGA 540  
 CCAAGATGCG GGAGTGTGAG CTGCTTCTGC AAGATGTGTC CCACAGACC ACAAGTTGG 600  
 10 GGAGGAAGGT GGAGACCATC ACCATAATT ATGACTGCGA GGGCTTGGC CTCAAGCATC 660  
 TCTGGAAGCC TGCTGTGGAG GCTTATGGAG AGTTCTCTG CATGTTTGAG GAAAATTATC 720  
 CCGAACAACCT GAAGCGCTTT TTTGTTGTTA AAGCCCCAA ACTGTTTCCCT GTGGCTTATA 780  
 ACCTCATCAA ACCCTTCCCTG AGTGAGGACA CTCGTAAGAA GATCATGGTC CTGGGAGCAA 840  
 ATTGGAAGGA GGTTTTACTG AAACATATCA GCGCTGACCA GGTGCTGTG GAGTATGGGG 900  
 GCACCATCAT TGACCCGTGAT GGAAACCCCA AGTGCAATC CAAGATCAAC TACGGGGGTG 960  
 15 ACATCCCCAG GAAGTATTAT GTGCGAGACC AGGTGAAACA CAGATATGAA CACAGCGTGC 1020  
 AGATTTCCTG TGGCTCTCTC CACCAAGTGG AGTATGAGAT CCTCTTCCCT GGCTGTGTCC 1080  
 TCAGGTAGAG GCTTTATGTC GATGGAGCGG ATGTGGTGT TGGGATTTTC CTGAAGACCA 1140  
 AGATGGGAGA GAGGCAGCGG GCAGGGGAGA TGACAGAGGT GCTGCCAAC CAGAGGTACA 1200  
 20 ACTCCACCTT GGTCCCTGAA GATGGGACCC TCACCTGCAG TGATCTGGC ATCTATGTCC 1260  
 TGCGGTTTGA CAACACCTAC AGCTTCAATC ATGCCAAGAA GGTCAATTTT ACTGTGGAGG 1320  
 TCTCTCTTCC AGACAAGGCC TCAGAAGAGA AGATGAAACA GCTGGGGGCA GGCACCCCGA 1380  
 AATAACACTT TCTCTCTATG CAGGCTTGGC CCGCTCAGTG TCTCCCTGTC AATTCTTACC 1440  
 CCTTGTAGCA GTCAATTTTC CACAACCTG AAGCCCCAAG AACTTGGGCT GGAGGACAGA 1500  
 25 CCTCAGGAGC TTTCATTTCA GTTAGGCAGA GGAAGAGCGA CTGCACTGGG TCTCCGTGTC 1560  
 TATCAAAATC CTAAGGAGTC CCCAGGAGCT GGCTGGCCAT CGTGATAGGA TCTGTCTGTC 1620  
 CTGTAAACTG TGCCAACCTC ACCTGTCCAG GGACAGCGAA GCTGGGGGTG GCGGGGGGCA 1680  
 TGTACACAG GGTGGCAGCA GGGAAAAAAA TTGAAAAAGG GTGAAAGATT GGGACTTAAC 1740  
 ACTTACAGGA AGTCAGCTGC CGGGGAGAAA CTGTCTCTTA AATGAACACA TAAGTTTAGA 1800  
 30 TCCCAATGAG GAGTAGCAGG GTAGCTGGTT GCTAGAGTTA CGGTGGGGAT CAGAAACTCT 1860  
 TCCAAACATT TTAGCACTGA GGCTGGGGTA GCTTTTGGCT TTTCCAGGT CTCAGGAGGT 1920  
 GGCTGTAGTC AGCACATATC TTCCCACTCG GTAGACAGGC TGGCTCTCC CTCACTTTGA 1980  
 GACTTTGGCA ACTCTTGGG CACACGGCCT GCTCTTTGA TTACTAATGA TTGTCACTGA 2040  
 CTGAGAGCTT CTTGGGACTT CGGGTACCCA CCGCTGTTC TCCATGCAAA CAAAGCGCCA 2100  
 35 GGGAAATGAC CCACAGGAT CCAGCTGCA GGGAGGGCCA GGGAGGTTGG GGGTGGGACT 2160  
 GAATGCTAAA AGCAGATCGT CCAGTGCCCT TTTGAGTCT ACCGCTCTCT CACCAAGCAG 2220  
 TCCCTCAATG GAGCAACCC GAGACAAAAA TGCTAAGTGG GATCAAGAGA GCAGCACTCG 2280  
 GAGAGGGTGT TTGCCAGTCT GAGTGTCCCG CGGTGCCCGC CAACCCGCTT CTTGACTGAC 2340  
 CTGAGCAAGG TCTTACTAAG CAGTCCCATC TCTGTGGGAG GCATGCAACG CGTGCAGGGA 2400  
 40 GTTCAGGTGC CAGTCCCGCT AGCCAGGCTT GAGGCCCCC CAGGCAGGAG GCGGCCCAAA 2460  
 GCGGGGGGCG GCGTCTGCGA GACTAGGGGC TGGGGGGGCG CACAGACGGC CTCGAAACCA 2520  
 CAGCCTTAC CCAATCCCA CGAGCCCCG CAACGAAACA CAGGTGCTGG GCTTTAGAGA 2580  
 ACATGGGAAG GCGGCCCCAG ACCTGCGCGG AACGCTTTC CTTGAGAGCC AGGCCCGGCG 2640  
 CCGCTCTGGG AAGCTCATCT TGCGAAGCTG AGGAGCTCA GGGCAAGGC CAGGCTAGCG 2700  
 45 CGGACCGGAA GGGGCCGAGG CTGCACGGGC CTCTGCCAGA ACGCTCAGGA CATCCCGGCC 2760  
 TGGGTTTACA ACGCTGTTAG GAAAATTAA CAATGAATAA AGCAACGCTT AGTGCBCA

**SEQ ID NO:267 PBX9 Protein sequence:**

Protein Accession #: NP\_036561

50 MSGRVGDLSR RQKEALAKFR ENVQDVLPAI PNPDDYFLR WLRARSFDLQ KSEAMLRKHV 60  
 EFRKQKIDIN IISWQPEPEV QOYLSGGMCQ YDLGCPVWY DIIFLDAKQ LLFSASKQDL 120  
 LRTKMERCEL LLQECARQTT KLRKVETIT IYDCEGLGL KHLWKPAVEA YGEFLCMFEE 180  
 55 NYPTLKRFL VVKAPKLPFV AYNLIKPLS EDTRKKIMVL GANWKEVLK HISPDQVPVE 240  
 YGGTMTDFDG NPKCKSKINY GGDIPRKYV RDQVKQYEH SVQISRGSSH QVEYELFPG 300  
 CVLRWQFMSD GADVGFGLF KTKMGERQRA GEMTEVLPNQ RYNHSLVPED GTLTCSDPGI 360  
 YVLRFDNTYS FIAHAKVNFT VEVLLPDKAS EEKMKQLGAG TPK

**SEQ ID NO:268 PBX8 DNA sequence**

Nucleic Acid Accession #: XM\_009756

Coding sequence: 301-1440 (underlined sequence corresponds to start and stop codon)

65 1 11 21 31 41 51  
 GTGGGACAG CCGAGCCCGG CCGGGCCCTT GGACGGCGTC GCCAAGGAGC TGGGATCGCA 60  
 CTGTGTCAG ACTTTGATG GATTGTGTTT TGTGGTAGCA TCTGATGGCA AAATCATGTA 120  
 TATATCCAG ACCGCTTCTG TCCATTTAGG CTATGCCAG GTGGAGCTCA CCGGCAACAG 180  
 70 TATTTATGAA TACATCCATC CTCTGACCA CGATGAGATG ACCGCTGTCC TCACGGCCCA 240  
 CCAGCGCTG CACCAACACC TGCTCCAAGG TATGAGATAG AGAGGTGTTT CTCTTCTGCA 300  
 ATGAATGTG TCTTGGCGAA AAGGAACGCG GGCCTGACCT GCAGCGGATA CAAGTTCATC 360  
 CACTGCAGTG GCTACTTGAA GATCAGGCGG TATATGCTGG ACATGTCCCT GTACGACTCC 420  
 TGCTACCAAG TGTGGGGCT GGTGGCGGTG GGCCAGTCGC TGCCACCCAG TGCCATCACC 480  
 GAGATCAAGC TGTACAGTAA CATGTTTATG TTCAGGGCCA GCCTTGACCT GAAGCTGATA 540  
 75 TTCTGGATT CCAGGGTGAC CGAGGTGACG GGGTACGAGC CGCAGGACCT GATCGAGAAG 600  
 ACCCTATACC ATCAGTGCA CCGCTGCGAC GTGTTCACCC TCCGTACGC ACACCACTCT 660  
 CTGTTGGTGA AGGCGCAGGT CACCAACCAAG TACTACCGGC TGTGTCCAA GCGGGGGGCG 720  
 TGGGTGTGGG TGCAAGCTTA CGCCACCGTG GTGCACAACA GCGGCTCGTC CCGGCCCCAC 780  
 80 TGCATCGTGA GTGTCAATTA TGTACTCAGC GAGATTGAAT ACAAGGAAC TCAAGTGTCC 840  
 CTGGAGCAGG TGTCCACTGC CAAGTCCAG GACTCCTGGA GGACCGCTT GTCTACTCTA 900

5 CAAGAACTA GGAATTAGT GAAACCCAAA AATACCAAGA TGAAGACAAA GCTGAGACA 960  
 AACCCCTACC CCCACAGCA ATACAGCTCG TTCCAAATGG ACAAACTGGA ATGCGGCCAG 1020  
 CTCGGAAACT GGAGAGCCAG TCCCCTGCA AGCGCTGCTG CTCTCCAGA ACTGCAGCCC 1080  
 CACTCAGAAA GCACTGACCT TCTGTACAG CCATCTTACA GCCTGCCCTT CTCTACCAT 1140  
 TACGGACACT TCCCTCTGGA CTCTCACGTC TTCAGCAGCA AAAAGCCAAT GTTGGCGGCC 1200  
 AAGTTCCGGC AGCCCCAAGG ATCCCCCTGT GAGGTGGCAC GCTTTTCTCT GAGCACACTG 1260  
 CCAGCCAGCG GTGAATGCCA GTGGCATTAT GCCAACCCCC TAGTGCCTAG CAGCTCGTCT 1320  
 CCACCTAAAA ATCTCCAGA GCCACCGGCG AACACTGCTA GGCACAGCCT GGTGCCAAGC 1380  
 TACGAGGCA AGCAGATGTC CTCTGCGGAG ATACCCGCCAG CTCCCAGGA CGCAGACTGA 1440  
 10 CTCTGTTTG CTGCTGGAC CAAC

SEQ ID NO:269 PBH8 Protein sequence:

Protein Accession #: NP\_005060

15 MKEKSKNAK TRREKENGFE YELAKLLPLP SAITSQLDKA SHRLTTSYL KMRAVFPEGL 60  
 GDAWGQPSRA GPLDGVAKEL GSHLLQTLDG FVFVVASDGK IMYISETASV HLGSLQVELT 120  
 GNSIYEYIHP SDHDEMTAVL TAHQPLHHHL LQYEIERSF FLRMKCVLAK RNAGLTCSGY 180  
 20 KVIHCSSYLK IRQYMLDMSL YDSCYQIVGL VAVGQSLPPS ATEIKLYSN MFMFRASLDL 240  
 KLIFLDSRVY EVTGYEPQDL IEKTLVHHVH GCDVFHLRYA HHLLLVKGOV TTKYRLLSK 300  
 RGGWVWVQSY ATVHNSRSS RPHCIVSVNY VLTEIEYKEL QLSLEQVSTA KSQDSWRTAL 360  
 STSQETKRLV KPNKTKMKT LRTNPFYPPQ YSSFQMDKLE CQQLGNWRAS PPASAAAPPE 420  
 LQPHSESSDL LYTPSYSLPF SYHYGHFLD SHVFSKKFPM LPAKFGQPQ SPCEVARFFL 480  
 25 STLPAEGEQ WHYANPLVPS SSSPAKNPPE PPANTARHSL VPSYEAFAA VRRFGEDTAP 540  
 PSFPGCHYR EEPALGPAKA ARQAARDGAR LALARAAPC CAPFTPEAPG APAQLFFVLL 600  
 NYHRLARRG PLGGAAPAS GLACAPGGPE AATGALRLRH PSPAATSPPG APLPHYLGAS 660  
 VIITNGR

SEQ ID NO:270 PB18 DNA sequence:

Nucleic Acid Accession#: AA760894

30 GGCACGAGGA GAAGATGTGG CTGCTCATG CTGACTTCT GCCATGGTGG TGAGGCGCTCC 60  
 CCAGCCATGT GGAACCTGTT TCAGGTGCTG GTTCCATGGC TCTCCTGAG CCGAAAAATA 120  
 35 GGAACTCCA TAGACCTTGT CCACTGGAAC TCGTTCCTAT CTACCTCCA CTCTATCCAG 180  
 GGTGATGAT CTCTGCAGTA AGTGAAGAG TTCTTCATGG CCCCCAAGGT TATATCCATC 240  
 TAGAACTCA GCACGTAAAT TCATCTGGAA ATAGTGCCCT TGTGGATATA AGTTAGGTAA 300  
 AACTGAAGAT GAGATCATA TGGATTAGGA TGGGATCTAA ATCCAATGAA AATGTCTTCA 360  
 40 TAAAAACAG GAAAGAACCC ATAGAAACAC AAGGAAGAG GTCATGTGAA GATGGAGGCA 420  
 GAGATTGGAG GGATGCAGCC ACGGCCAGG GAATGCCAGC AGCCACCCAG AAGCTGGAAG 480  
 GAAATGAGGG ATTCTCTCT AGAACCTTGA GAGAGRACAT GGCTCTGTA ACAGCTTGAT 540  
 TTTGACTTG CCCATAGCT GTATACTCT ACTTTGGATA CAATTTTATC CAAACTTGGC 600  
 TAAACAGTT CTCAGCCTAT GGAAATTTA AAATGGAGAA GATTCAACTC GATTCTTACA 660  
 GATTCAAAGC AAGAAAAATGA TGGGAACATA GGAGGAGACC AAGAAAGCCT ATAAAAAGCA 720  
 45 AAAAAATGAA GTGAACATTG TGGTAGCTTT AAGATGTTA GTGTAGCTGC AGGCACCTCA 780  
 TACACATGAA AACCCCCAAG GGAATCCCC ATATCAGAGT GTAGTGTGAT ATTTGACATT 840  
 YGTGATCATY TAGAGATGA CAGAAAAGGT GAATCTGTGT TCTGTATATT CTGCTAAGG 900  
 CAAAGAAATG TTAGCTTTC TTTAAATAG TTCCATAATT TTTTAAAA AGCTTTGCTT 960  
 50 GAAAACTGTA AGCTTCCCAT ATCTGGAGCA TTTCACTTTA AATATTGGA TAAATATGTT 1020  
 ATCTTCTTAC TTGGACATT CATGTGTTA GGGATTGTYT TYTAAATCTT TCTAATTCA 1080  
 TTAGCTGCT AACACTTCC GCAGAGCTAA ACCATTACAG ANTATGAAAT AAAGACCTCA 1140  
 TTGATTGAA CTTAAAAAAA AAAAMAMAAA AAAAAAAAAA AAAAAAAT GA

SEQ ID NO:271 PBQ4 DNA sequence

Nucleic Acid Accession#: AA149579

Coding sequence: 1-1363 (underlined sequence corresponds to start and stop codon)

60 1 ATGGAATCAA TCTCTATGAT GGGAGCCCT AAGAGCCTTA GTGAACTTG TTTACCTAAT 60  
 GGCATAAATG GTATCAAGA TGCAAGGAAG GTCACTGTAG GTGTGATTGG AAGTGGAGAT 120  
 TTTGCCAAT CTTTGACCAT TCGACTTATT AGATGCGGCT ATCATGTGGT CATAGGAAGT 180  
 AGAATCTCTA AGTTTGCTTC TGAATTTTTT CCTCATGTGG TAGATGTCAC TCATCATGAA 240  
 65 GATGCTCTCA CAAAAACAAA TATAATATTT GTTGTATAC ACAGAGAAAC TTATACCTCC 300  
 CTGTGGGACC TGAGACATCT GCTTGTGGGT AAAATCCTGA TTGATGTGAG CAATAACATG 360  
 AGGATAAACC AGTACCAGA ATCCAATGCT GAATATTGGS CTTCATTATT CCCAGATTCT 420  
 TTGATTGTCA AAGGATTTAA TGTGTCTCA GCTTGGGCAC TTCAGTTAGG ACCTAAGGAT 480  
 GCCAGCCGGC AGGTTTATAT ATGCAGCAAC AATATTCAAG CGCGACAACA GGTATTGAA 540  
 CTGCGCCGCC AGTTGAATTT CATTCACATT GACTTGGGAT CCTTATCATC AGCCAGAGAG 600  
 70 ATTGAAATTT TACCCCTACG ACTCTTTACT CTCTGGAGAG GGCCAGTGGT GGTAGCTATA 660  
 AGCTTGGCCA CATTTTTTTT CCTTTATTCC TTGTCTAGAG ATGTGATCA TCCATATGCT 720  
 AGAAACCAAC AGAGTGACTT TTACAAAATT CCTATAGAGA TTGTGAATAA AACCTTACCT 780  
 ATAGTTCCTA TTACTTTGCT CTCCCTAGTA TACCTGCAG GTCTTCTGGC AGCTGCTTAT 840  
 CAACCTTATT ACGGCACCAA GTATAGGAGA TTTCACCTT GGTGGGAAC CTGGTTACAG 900  
 75 TGTAGAAAAC AGCTTGGATT ACTAAGTTT TTCTTCGCTA TGGTCCATGT TGCCTACAGC 960  
 CTCTGCTTAC CGATGAGAAG GTACAGAGA TATTGTGTTT TCAACATGGC TTATCAGCAG 1020  
 GTTCACTAAC ATATTGAAA CTCTTGGAA GAGGAAGAG TTTGGAGAA TGAAATGTAT 1080  
 ATCTCCTTTG GCATATAGAG CCTTGGCTTA CTTTCCCTCC TGGCAGTCAC TTTATCCCT 1140  
 TCAGTAGACA ATGCTTTTAA CTGGAGAGA TTCAGTTTAT TTCAGTCTAC ACTTGGATAT 1200

GTCGCTCTGC TCATAAGTAC TTCCATGTT TTAATTTATG GATGGAAACG AGCTTTTGAG 1260  
 GAAGAGTACT ACAGATTTTA TACACCACCA AACTTTGTTT TTGCTCTTGT TTTGCCCTCA 1320  
 ATTGTAATTC TGGATCTTTT GCAGCTTTGC AGATACCCAG ACTGA

5 SEQ ID NO:272 PBQ4 Protein sequence:  
 Protein Accession #: none

10 1 11 21 31 41 51  
 MRSISMMSGP KSLSETCLPN GINGIKDARK VTVGVIGSGD FAKSLTIRLI RCGYHVWIGS 60  
 RNEKFASEFF PHVVDVTHE DALTKNIIF VAHREHYTS LMDLRHLVG KILIDVSNM 120  
 RINQYFESNA EYLASLFPDS LIVKGFNVVS AWALQLGFKD ASRQVYICSN NIQARQOVIE 180  
 LARQLNFIPI DLGSLSSARE IENLPLRLFT LWRGPFVVAI SLATFFFLYS FVRDVIHPYA 240  
 15 RNQSDPYKI PIEIVNKTLP IVAITLLSLV YLAGLLAAAY QLYYGTXYRR FPPWLETWLQ 300  
 CRKQLGLSP FFAMVHVAYS LCLPHRRSER YLFNMYAQ VHANISNWN EEEVWRIEM 360  
 ISFGIMSLGL LSLLAVTSLP SVSNALNWR EFSIQSTLGY VALLISTFHV LIYWKRAFE 420  
 EBYRYRYTTP NFVLALVLP SVILDLQLC RYPD

20 SEQ ID NO:273 PBQ5 DNA SEQUENCE  
 Nucleic Acid Accession#: NM\_001973  
 Coding sequence: 150-1445 (underlined sequence corresponds to start and stop codon)

25 1 11 21 31 41 51  
 CCGCCGCTT CTAAGCTGCG GCGGGGGTGC CAGCGGCTGC CGCGCCGTCC TCGAGTTTCC 60  
 AGCGTAGAGA GGAGGCTGAG GCGGGAGAGG CGCATCGTGT TCGAGGCGGA GACCGAGGGG 120  
 GAGCGCCGCG CGCGGCGTGC CTCATTGCTA TGGACAGTGC TATCACCTCG TGCAGTTTCC 180  
 TTCTTCAGCT CCTGCAGAAG CCTCAGAACA AGCAGATGAT CTGTGTGACC TCTAATGATG 240  
 30 GGCAGTTTAA GCTTTTGCAG GCAGAAGAGG TGGCTCGTCT CTGGGGGATT CGCAAGAACA 300  
 AGCCTAACAT GAATTATGAC AAATCAGCC GAGCCCTCAG ATACTATTAT GTAAAGAATA 360  
 TCATCAAAA AGTGAATGGT CAGAAGTTTG TGTACAAGTT TGTCTCTTAT CCAGAGATTT 420  
 TGAACATGGA TCAATGTACA GTGGGCAGGA TTGAGGGTGA CTGTGAAAGT TTAACCTTCA 480  
 GTGAAGTCAG CAGCAGTTCC AAAGATGTGG AGAATGGAGG GAAAGATAAA CCACCTCAGC 540  
 35 CTGGTGCCAA GACCTCTAGC CGCAATGACT ACATACACTC TGGCTTATAT TCTTCATTTA 600  
 CTCTCAACTC TTGAACCTCC TCCAATGTAA AGCTTTTCAA ATTGATAAAG ACTGAGAATC 660  
 CAGCCGAGGA ACTGGCAGAG AAAAATCTCT CTCAGGAGCC CACACCATCT GTCATCAAA 720  
 TTGTACAGAC ACCTTCCAAA AAGCCACAG TTGAACCTGT TGTCTGCCAC ATTTCGAATT 780  
 40 GCGCAAGTAT TCTCTCATCT TCAGAAGAAA CTATCCAAGC TTGTGAGACA TTGGTTTCCC 840  
 CAAAACCTGC TTCCCTGAAA GCGCCAACTC CTGCTCTTAA CGTAATGACT GCTTTTGCCA 900  
 CCACACCAAC CATTTCTGTC ATACCCCTTT TGCAGGAACC TCCAGAACA CCTTCACACC 960  
 CACTGAGTTC TCACCCAGAC ATCGACACAG ACATTGATTC AGTGGCTTCT CAGCCAAATG 1020  
 AACTCTCAGA GAATTTGTCT CTGGAGCCTA AAGACAGGA TTCAGTCTTG CTAGAAAAGG 1080  
 45 ACAAGTAAA TAATTCATCA AGATCCAAGA AACCCTAAGG GTTAGGACTG GCACCCACCC 1140  
 TTGTGATCAC GACAGTGTAT CCAAGCCAC TGGGAATACT GAGCCCATCT CTCCCTACAG 1200  
 CTCTCTTAC ACCAGCATTT TTTTCACAGA CACCCATCAT ACTGACTCCA AGCCCTTGC 1260  
 TCTCCAGTAT CCACTTCTGG AGTACTCTCA GTCTGTGTGC TCCCTTAAGT CCAGCCAGAC 1320  
 TGCAGGTGTC TAACACACTT TTCCAGTTTC CTCTGTGACT GAACAGTCAAT GGGCCATTCA 1380  
 50 CTCTGTCTGG GCTGGATGGA CCTTCCACCC CTGGCCCAT TTTCCACAG CTACAGAAGA 1440  
 CATACCTAT GCACTGTGGG AATGAGAGAA CCGAGGAACG AAGAAACAGA CATTCACAT 1500  
 GATTGCAATT GAAGTAGACA ATGTAGATT CTACAATGCT GATAATAGAT TATTGTGATT 1560  
 TTTGCCATTC CCAATTGAAA ACATCTTTT AGGATCTCT TTGAATAGGA CTCAAGTTGG 1620  
 ACTATATGTA TAAAAATGCC TTAATGGAG TCTAACTCC ACCTCCCTCT GTCTTTTCT 1680  
 55 TTTCTTTTC TTCTCTCTCT TCCTTTCTCT TTCTCTTTA AAAATATTT GAGCTTTGTG 1740  
 CTGAAGAAGT TTTTGGTGGG CTTTAGTGAC TGTGCTTTC AAAAGCAATT AAGAACAAG 1800  
 TTAATCTCT TGGCTATTGG GACCTTTGG CCAGGAAAAA TTATGCTTAG AATCTATTAT 1860  
 TTAAGAAGT ATTTGTGAAA TGAATAAAAA AAAAAAATA AAAAAAATA 1920  
 AAAAAAATA AAA

60 SEQ ID NO:274 PBQ5 Protein sequence:  
 Protein Accession #: NP\_001864

65 MDSAITLWQF LLQLLQKPQN KHMICWTSND GQFKLLQAEV VARLWGIRKN KPNMNYDKLS 60  
 RALRYYYVKN IUKVNGQKF VYKFVSYPEI LNMDPMTVGR IEGDCESLNF SEVSSSKDV 120  
 ENGGKDKPPQ PGAKTSSRND YHSGLYSSP TLNLSNNSV KLFKLIKTEP PAELAEKKS 180  
 POEPTSVIK FVTTPSKKPP VEPVAATISI GPSISPSSEE TQIALETLS PKLPSLEAPT 240  
 SASNVMTAFA TTPPISIPP LQEPPTPSP PLSSHPDIDT DIDSVASQPM ELLENLSLEP 300  
 70 KQDQSVLEK DKNVNSRSK KPKGLGLAPT LVITSSDPSP LGHLSPLFT ASLTPAFSSQ 360  
 TPILLTSPSL LSSHFWSLT SPVAPLSPAR LQAGNTLQF PSVLNSHGFF TLGLDGFST 420  
 PGFSPDLQK T

75 SEQ ID NO:275 PBQ3 DNA SEQUENCE  
 Nucleic Acid Accession#: AB040921  
 Coding sequence: 131-2560 (underlined sequence corresponds to start and stop codon)

1 11 21 31 41 51  
 | | | | | |

5 AATCAGGAAC AGATCATATA TTGACCGAGA TTCTGAGTAT CTCTTCGAAG AAAATGAACC 60  
 AGATGGAAC TTAGACCAAA AATTATTGGA AGATTTCAG AAGAAAAAA ATGACCTTCG 120  
 GTATATTGAA ATGCAGCATT TCAGAGAAAA GCTGCTTCG TATGGAATGC AAAAGGAATT 180  
 GGTAATTTA ATTGATAACC ATCAGGTAAC AGTAATAAGT GGTGAAACTG GTTGTGCAAA 240  
 10 AACCACTCAA GTTACTCAGT TCATTTTGGG TAACTACATT GAAAGAGGAA AAGGATCTGC 300  
 TTGCAGAA TA GTTTGTACTC AGCCAAGAAG AATTAGTGCC ATTTCACTTG CGGAAAGAGT 360  
 AGCTGCAGAA AGGGCAGAA CTGTGGGCG TGGTAATAGT ACTGGATATC AAAATCGTCT 420  
 CCAGAGTCGG TTGCCAAGGA AACAGGGTTC TATCTTATAC TGTACAACAG GAATCATCCT 480  
 TCAGTGGCTC CAGTCAGACC CGTATTGTGC CAGTGTAGT CATATCGTAC TTGATGAAAT 540  
 CCATGAAAGA AATCTGCAGT CAGATGTTTT AATGACTGTT GTTAAAGACC TTCTCAATTT 600  
 TCGATCTGAC TTGAAAGTAA TATTGATGAG TGCAACATG AATGCAGAAA AGTTTTCAGA 660  
 ATATTTTGGT AACTGTCCAA TGATACATAT ACCTGGTTTT ACCTTCCCGG TTGTGGAATA 720  
 TCTTTTGGAA GATGTAATTG AAAAAATAAG GTATGTTCCA GAACAAAAAG AACACAGATC 780  
 CCAGTTTAAG AGGGGTTTCA TGCAAGGGCA TGTAAATAGA CAAGAAAAAG AAGAAAAAGA 840  
 15 AGCAATATAT AAGAATCATT GGCCAGATTA TGTAAAGGAA TGCCGAAGAA GGTATTCTGC 900  
 AAGTACTGTA GATGTTATAG AATGATGGA GGTATGATAA GTTGATCTGA ATTTGATGTT 960  
 TGGCTCATC CGATACATG TTTTGGAAAG AGAGGATGGT GCGATCTGG TCTTTCTGCC 1020  
 AGGCTGGGAC AATATCAGCA CTTTACATGA TCTCTTGATG TCACAAGTAA TGTTTAAATC 1080  
 20 AGATAAATTT TTAATATATC CTTTACATTC ACTGATGCTT ACAGTTAACC AGACACAGGT 1140  
 GTTTAAAGA ACCCTCCCTG GTGTTCCGAA AATAGTAATT GCTACCAACA TTGCGGAGAT 1200  
 TAGCAATACC ATAGATGATG TCGTTTATGT GATAGATGGA GGAATAATAA AAGAGACGCA 1260  
 TTTTGTACTT CAGAACATA TCAGTACAAT GTCCGCTGAG TGGTTAGTA AAGCTAATGC 1320  
 CAAACAGAGA AAAGGTCGAG CTGGAAGAGT TCAACCTGGT CATGTCTATC ATCTGTATAA 1380  
 25 TGGTCTTAGA GCAAGTCTTC TAGATGACTA TCAACTGCCA GAAATTTTGA GAATCTCTTT 1440  
 GGAAGAATTT TGTTTACAAA TAAAGATTTT AAGGCTAGGT GGAATGCTTT ATTTTCTGAG 1500  
 TAGATTAATG GACCCACCAT CAAATGAGGC AGTGTACTC TCCTAAGAC ACCTGATGGA 1560  
 GCTGAACGAT TGTGATAAAC AAGAAGAATT GACACCTCTT GGAGTCCACT TGGCAGGATT 1620  
 ACCGTTGAG CCACATATG GAAATATGAT TCTTTTGGG GCATGTTCT GCTGCTTGA 1680  
 30 CCCAGTACTC ACTATTGCTG CTAGTCTCAG TTTCAAAGAT CCATTTGCTA TTCCACTGGG 1740  
 AAAAGAAAAG ATTGCAGATG CRAAGAAGAA GGAATTGGCA AAGGATCTA GAATGATCA 1800  
 CTTAACAGTT GTGAATGCTG TTGAGGGCTG GGAAGAGGCT AGGGCAGCTG GTTTCAGATA 1860  
 CGAAAGGAC TATTGCTGGG AATATTTTCT GTCTTCAAC ACCTGCGAGA TGCTGATAA 1920  
 CATGAAAGGA CAGTTGCTG AGCATCTTCT TGGAGCTGGA TTTGTAAGCA GTAGAAATCC 1980  
 35 TAAAGATCCA GAATCTAATA TAAATTCAGA TAATGAGAAG ATAATTAAG CTGTCTCTG 2040  
 TGCTGTTTA TATCCCAAAG TTGCTAAAT TCGACTAAAT TTGGGTAAAA AAGAAAAAT 2100  
 GGTAAAAGTT TACACAAAAA CCGATGGCCT GGTGCTGTT CATCTAAAT CTGTTAATGT 2160  
 GGAGCAAGCA GACTTTCTCT ACACTGGCT TATCTATCAC CTAAGATGA GAACAAGCAG 2220  
 TATATACTTG TATGACTGCA CAGAGGTTTC CCCATCTGCT CTCTGTTTT TTGAGGTTGA 2280  
 40 CATTTCCATC CAGAAGGATA ACGATCAGGA AACTATTGCT GTAGATGAGT GGATGTTATT 2340  
 TCACTCTCCA CCAAGAAATG CCCATCTTGT TAAGGAATTA AGAAGGAAC TAGATATTCT 2400  
 TCTGCAAGAG AAGATGAAA GTCTCATCC TGTAGACTGG AATGACACTA ATCCAGAGA 2460  
 CTGTGCACTA CTGTGAGCTA TTATAGACTT GATCAAAACA CAGGAAAAGG CAATCCOCAG 2520  
 GAATTTCCG CCACGATTCC AGGATGGATA TTACAGCTGA CAGCTTTTCA GGGGTGGTCT 2580  
 45 GAAAGCCAG TTTGACAGCC ATTCTTCATC ATTGTTTAAA TTTTGGCTGG ATGCCAAAAC 2640  
 CTGGGACATG AACAAATTTT ATGTGTAAGG TAGAAGCCTT CAGTAGGTAG TAAAGACTTA 2700  
 ATGTGCAATG CTTGATGTTA TATGTAGAGA TATATATATA TATATATATA CCATAAAGC 2760  
 AATATGTTCT CTGATCATAT ACTCTGCTGT GGTATGCCC ACTCTTTGGG AGTATATCC 2820  
 CTTTATATAT ATTGAGTATT GTACCATTG AGAAATCTT TTGTTCTGTT ATACAAAAAT 2880  
 50 AATCTTTCTG CATATAATGA TTGATGATAC CACCAGTAAA AATAGGATGT TTACCCCAA 2940  
 ACAAGTGTCA ATTAAGAATT TGAACACAAC CACATTTTTT AAAATGAAC TTCTATCGGA 3000  
 AGTAAATTA TTTGTTGTAA TAAAGTCCAG TATTTAATAA AATGTACAA GTTAAATCTC

SEQ ID NO:276 PBYS Protein sequence:  
 Protein Accession #: BAA95012

55 IRNRSYIDRD SEYLLQENEP DGTLQKLE DLQKKKNDLR YIBMQHFREK LPSYGMQKEL 60  
 VNLIDNHQVT VISGETGGK TTQVTQFLD NYIERGKGS CRIVCTQPRR ISALSVAERV 120  
 60 AAERAESCGS GNSTGYQRL QSLRFRKQGS ILYCTTGIL QWLQSDPYLS SVSHVLDIE 180  
 HERNLQSDVL MTVVKDLNLF RSLKVLMS ATLNAEFSE YFNCPMIHI PGFTFFVVEY 240  
 LLEDVIEKIR YVPEQKEHRS QFKRGFMQGH VNRQEKEEKE AIYKERWPDFY VRELRRRYS 300  
 STVDVIEHME DDKVDLNLIV ALIRYIVLEE EDGAILVFLP GWDNISTLHD LLMSQVMFKS 360  
 DKFLIPLHS LMPVTNQTQV FKRTPPGVK IVIATNIAET SITDDVYVY IDGGKIKETH 420  
 FDTQNNISTM SAEWVSKANA KQRKGRAGRV QPGHCYHLYN GLRASLDDY QLPILRPL 480  
 65 EELCLQIKIL RIGGIAYFLS RLMDPPSNEA VLLSIRHME LNALDQKEEL TPLGVHLARL 540  
 PVEPHIGKMI LFGALFCCLD PVLTAASLS FKDPFVPLG KEKIDARRK ELAKDTRSDH 600  
 LTVVNAFEGW EEARRRGFRY EKDYCWEIFL SSNTLQMLHN MKGQFAEHL GAGFVSSRNP 660  
 KDPESNIND NEKIKAVIC AGLYPKVAKI RLNLGKKRKM VKVYTKTDGL VAVHPKSVNV 720  
 EQTDFRYNWL IYHLKMRSS IYLYDCTEVS PYCLFFGGD ISIQKNDQBE TIAVDEWIVF 780  
 70 QSPARIAHLV KELRKELDIL LQEKIESPHV DVWNDTKSRD CAVLSAIDL IKTQEKATPR 840  
 NPPFRFQDGY YS

75 Nucleic Acid Accession#: AA464018  
 Coding sequence: 64-1669 (underlined sequence corresponds to start and stop codon)

SEQ ID NO:277 PBYS DNA SEQUENCE

GATTTTATCC TGAACATTA CAGTGAAGAT GGCTATTAT ATGAAGATGA AATTGCAGAT 60  
 CTTATGGATC TGAGACAAGC TTGTCGGACG CCTAGCCGGG ATGAGGCCGG GGTGGAAC 120



CTGATGACAT ACTTCATCCA GCTGGGCTTT GTCGAGAGTC GATTCCTCCC GCCACACGG 180  
 CAGATGGGAC TCCTGTTTAC CTGGTATGAC TCTCTCACCG GGGTTCGGT CAGCCAGCAG 240  
 AACCTGCTGC TGGAGAAGGC CAGTGTCTGT TTCAACACTG GGGCCCTCTA CACCCAGATT 300  
 GGGACCCGGT GTGATCGGCA GACGCAGGCT GGGCTGGAGA GTGCCATAGA TGCCTTTCAG 360  
 5 AGAGCCGCGAG GGGTTTTAAA TTACCTGAAA GACACATTTA CCCTACTCC AAGTTACGAC 420  
 ATGAGCCCTG CCATGCTCAG COTGCTCGTC AAAATGATGC TTGCACAAGC CCAAGAAAAGC 480  
 GTGTTTGAGA AAATCAGGCT TCCTGGGATC CGGAATGAAT TCTTCATGCT GGTGAAGGTG 540  
 GCTCAGGAGG GTGCTAAGGT GGGAGAGGTC TACCAACAGC TACACGCAGC CATGAGCCAG 600  
 10 GGGCCGGTGA AAGAGAACAT CCCTACTCC TGGGCCAGCT TAGCCTCGCT GAAGGCCAC 660  
 CACTACGCGG CCCTGGCCCA CTACTTCACT GCCATCTCTC TCATCGACCA CCAGGTGAAG 720  
 CCAGGCACGG ATCTGGACCA CCAGGAGAAG TGCCTGTCCC AGCTCTACGA CCACATGCCA 780  
 GAGGGGCTGA CACCCCTGGC CACACTGAAG AATGATCAGC AGCCCGGACA GCTGGGGAAG 840  
 TCCCACTTGC CGAGAGCCAT GGCTCATCAC GAGGAGTCGG TCGGGGAGGC CAGCCTCTGC 900  
 15 AAGAAGCTGC GGAGCATTTA GGTGCTACAG AAGGTGCTGT GTGCCGACA GGAACGCTCC 960  
 CGGCTCACGT ACGCCGACA CCAGGAGGAG GATGACCTGC TGAACCTGAT CGAGGCCGCC 1020  
 AGTGTGTGTG CTAAAACCTGA GCAAGAGGTT GACATTATAT TGCCCAAGTT CTCCAAGCTG 1080  
 ACAGTCAAGG ACTTCTTCCA GAAGCTGGGC CCCTTATCTG TGTTCGCG TAACAAGCGG 1140  
 TGGAGCGCTC CTCGAGAAGC CCGCTTCACT GCAGAAGAAG GGGACTTGGG GTTCACTTTC 1200  
 20 AGAGGGAAGC CCGCCGTTCG GGTTCACCTC CTGGATCCTT ACTGCTCTGC CTCGGTGGCA 1260  
 GGAGCCCGGG AAGGAGATTA TATTGTCTCC ATTACGCTTG TGGATTGTA GTGGCTGACG 1320  
 CTGAGTGAGG TTATGAAGCT GCTGAAGAGC TTTGGCGAGG ACGAGATCGA GATGAAAGTC 1380  
 GTGAGCCTCC TGGACTCCAC ATCATCCATG CATAATAAGA GTGCCACATA CTCCTGGGA 1440  
 ATGCAGAAAA CTGACTCCAT GATCTGCTTA GCCATTGATG ATGACGACAA AACTGATAAA 1500  
 25 ACCAAGAAAA TCTCAAGAA GCTTCTCTC CTGAGTTGGG GCACCAACAA GAACAGACAG 1560  
 AAGTCAGCCA GCACCTGTG CCTCCATCG GTCCGGGCTG CACGGCTCA GTTCAAGAAG 1620  
 AAGCTGCCCT CCCTTTTCAG CCTTCTCAAC TCAGACAGTT CTGGTACTAA

30 SEQ ID NO:278 PBY6 Protein sequence:  
 Protein Accession #: NP\_149094

35 DFLEHYSED GYLVEDEIAD LMDLRQACRT PSRDEAGVEL LMTYFIQLGF VESRFFPPTR 60  
 QMGLLFTWYD SLTGVPVSQQ NLLLEKASVL FNTGALYTIQ GTRCDRQTA GLESAIDAFQ 120  
 RAAGVLYNLK DTFHTHSYD MSPAMLSVLV KMMLAQAES VFEKISLPGI RNEFFMLVKV 180  
 40 AQEAAGVGEV YQQLHAAMSQ APVKENIPYS WASLACVKAH HYAALAHYFT ALLIDHQVK 240  
 PGTDLDHQEK CLSQLYDHMP EGLTFLATLK NDQQRRLQK SHLRRAHAH EESVREASLC 300  
 KKLRSIEVLQ KVLCAAQERS RLTYAQHQEE DDLLNLIDAP SVVAKTEQEV DILPQFSKL 360  
 TVTDFQKLG PLSVFSANKR WTPRSIRFT AEEGDLGFTL RGNAPVQVHF LDPYCSASVA 420  
 45 GAREGDYIVS IQLVDCWKLT LSEVMKLLKS FGEDEIEMKV VSLDSTSSM HNKSATYSVG 480  
 MQKTYSMICL AIDDDDKTDK TKKISKKLSF LSWGNTNKNRQ KSASTLCLPS VGAARPVVK 540  
 KLPSPFSLN SDSSWY

45 SEQ ID NO:279 PBY6 DNA SEQUENCE  
 Nucleic Acid Accession#: AF107493  
 Coding sequence: 125-556 (underlined sequence corresponds to start and stop codon)

50 1 11 21 31 41 51  
 | | | | |  
 GAATTCGGCA CGAGCCTTGT TGGAGGTTCT GGGGCGCAGA ACCGCTACTG CTGCTCGGT 60  
 CTCTCCCTGG GAAAAAATTA AATTGAAC TTTTGGAGCT GTGTGCTAAA TCTTCAGTGG 120  
 GACATGGGT TCAGACAAAA GAGTAGTAG AACAGAGCGT AGTGAAGAT ACGGTTCCAT 180  
 CATAGACAGG GATGACCGTG ATGAGCGTGA ATCCCGAAGC AGCGCGAGGG ACTCAGATTA 240  
 55 CAAAAGATCT AGTGATGATC GGAGGGGTGA TAGATATGAT GACTACCGAG ACTATGACAG 300  
 TCCAGAGAGA GAGCGTGAAA GAAGGAACAG TGACCGATCC GAAGATGGCT ACCATTGAGA 360  
 TGGTACTACT GGTGAGCAGC ACTATAGGCA TGACATCAGT GACGAGAGGG AGAGCAAGAC 420  
 CATCATGCTG CGCGGCTTTC CCATCACCAT CACAGAGAGC GATATTGCGA AATGATGGA 480  
 GTCTTTCGAA GGCCTCTAGC CTGCGGATGT GAGGCTGATG AAGAGGAAAA CAGGTGAGAG 540  
 60 CTGCTTAGT TCCTGATATT ATTGTCTCTT TCCCATATCC CACCTCAGTC CCTAAAGAAC 600  
 ATCCTGATT CCACAGTCTT CAAGCACATG AATTCAGAAAT GAAAGTTTG CCATGGCTAA 660  
 GGAATGTGAC TCTTTGAAAA CCATGTTAGC ATCTGAGGAA CTTTTTTAAA CTTTGTTTTA 720  
 GGGACTTTTT TTCTCTTAGG TAAGTAATGA TTTATAAACT CCTTTTTTTT TTTGACTATA 780  
 GTCGGTTGCA TGGTTACTTT AAGCGTGAA TCAATGGAG TGGCATTTAG TTCAGCGGCG 840  
 65 TTGTTCCTTG CCATGGCAAA GTATCAAGAA GATCCCCAAG TCAAGTCACA TTTGTAAGC 900  
 TGCTTCCCAA TTGGCTTTGT CACGCAAGTGT TGAAGCAGTG GGAGAGAGAT TCACCTGTTA 960  
 TAAAGGAAGT GACTAACACA AGTATCCCGT CTATATCTGA ATGCTGTCTC TAGGTGTAAG 1020  
 CCGTGCTTTC GCTTGCCTGG AGTTTATCA CTGCAAGAT GCTACCGCT GGAATGGAAGC 1080  
 CAATCAGGTT GCTTCACTCA CCAAGCTAG ATATTCATGA AAATGGAACA AGTCTGTACA 1140  
 70 ATTTTAAAAA AAGGTTGAAG GAGTGGTTTG TTCCAAAGGA GTGACTTTTT TTTAAAAAAA 1200  
 AAGCTTTGTA TATATAAAA TTGATGTTAC TAGAATAAGT ACAGTACCAA GGACTTCATT 1260  
 ATAGAATTGG TTCTGCCCTT AAACATGGCT ACCTACCTGG CAGGGCTTTG TTAACCTACTG 1320  
 AATACCTGTC TGGTAATCAC TAAACATCT TTATGTTTCC CTTTTPTCTA GTTTGTATA 1380  
 TTCTATTATT GTCCATTGAG AGTAAGCTTA GTATATCAAA CTCTCCATTT GACAGTGAAG 1440  
 75 AGAACATAGT GAAAGTCTGT GCGCGCATTT TTATAAGTAA TTCTTATTTT CTCCTGGAAG 1500  
 ACCACAAAGC CTCTGGAGG CGTAACCTGT CAGACCGGTC TTCAGGGAAT ATTTAAGGAC 1560  
 TTAGTGAATG TTATGAACAA TAAGTCTGAT GAGATTAGCC TGGAGTGTGT GTCTGACGAC 1620  
 TGTCTAATCT AGAGTGGCAT TAACATTCTA ATCTCCTTGA GAATGCCCTT TATAGTCTGT 1680  
 TCAAGCAAG TCATTGATGG TTCTTCGAGG TAGTGTTAAC TGAAGTGTTC TTCAGTTTGT 1740  
 CAAGATAATG TTCAGTGCTT GGCACCTAAA TAACATTTTT TGCAAGAACT CCAAGGCACA 1800

5 TTATTGAATG CCTTTAACCA AGTGCATCTT GGAAGTTTG CTGACTCAT TATCTTGCTT 1860  
 TTCTGCAGCA TTCTGTGATT TGAGTCATCC ATGAATCCAT GAATAAAAGT TACATTCTTT 1920  
 GATTGGTAAT ATTGCCATTT ATAACAAGAC TCACTAATGA GGGTATCACT TTGACTGACT 1980  
 GATTGTGTA AGTTTTTAAG CCTCTCATTT TCCTAACCCA GAAATCACAG CCTGATTTTA 2040  
 10 TTAAGAAGTAG AGCTTCATTC ATTTTCATACC ATAGATACCA TCCTAGTAAA TCCAGAACAT 2100  
 ATACAAGGTT CATGTGAGTC TGCTTTCTTG ACATGATAGC ATTGTTTGAT GCAGTGGATA 2160  
 TGTCAGAATG ACTAACCTAG GAGTTTGAAA CTCTTAAGAA ACTAAAACCT GTAAGACATT 2220  
 TAAAAGTCTC CACAATTTTA ATGTATACAA AGCTATGTTA CTGTGTACAA CATTACAGTT 2280  
 CAAATTTACT CCAGAAATAA AAGGCCAGTA GGATTAGGGA CTCACTGGTA GTTTGGAGTC 2340  
 15 TCCACAGACA CATCCCTCCT AGTGGGATGA TCTATTACCA TATCTCCAG CTTTTATTAT 2400  
 TTTGCTCTCG TATATCACAG TGAAGTGGAT GCCCTTCAGC TTTTCTCTC CTGGCCAGAC 2460  
 ATGCAGTCTT GCCTTTAGAT ATGCAGAGA CAAAATTCAC AGCATGTCTT AAATCTTCCA 2520  
 GGATTTGCAA GAACCAAAAT GCTCAACAGT ATGTATGTTT AGAGGGGTTA GACTCCTTTT 2580  
 20 TAAAATCTGG ATATCTAACC ACCTACTTAA ATCTGTTGA TAGTGTCAAA CCACCCCCAC 2640  
 CCTTGATCCT CCCACCCCA AAAAAAAAAA AAAA

**SEQ ID NO:280 PBV8 Protein sequence:**

Protein Accession #: XP\_003261

20 MGSDKRVSR ERSGRYGSII DRDDRDERES RSRRRSDYK RSSDDRRGDR YDDYRDYDSP 60  
 ERERERRNSD RSEDGYHSDG DYGEHDYRHD ISDERESKTI MLRGLPTTT ESDIREMMES 120  
 FEGPQPADVR LMKRKTGESL LSS

**SEQ ID NO:281 PC12 DNA SEQUENCE**

Nucleic Acid Accession#: AF208291

Coding sequence: 109-3705 (underlined sequence corresponds to start and stop codon)

30 1 11 21 31 41 51  
 CGGCCGCTTT TTCTCAAGA TGCGAGATTC CCACTGAGGC TGAGGGGGCC GAGCTCGGCG 60  
 GCCGCGTTCC CTCTCCGCTT GCCATGAACC GCGGACACCC CGGCCCGCAT GGCCCCCGTG 120  
 35 TACGAAGGTA TGGCCCTACA TGTCGAAGTT TTCTCCCTCC ACACCTCTCA ATCAAGTGCC 180  
 TTCTGTAGTG TGAAGAAACT AAAAGTAGAG CCAAGTTCCT ACTGGGACAT GACTGGGTAC 240  
 GGCTCCACCA GCAAAAGTGA CAGCCAGAGC AAGAATATAC CACCTTCTCA GCCAGCCTCC 300  
 ACAACCGTCA GCACCTCCTT GCGCGTCCCA AACCACAGCC TACCTTACGA GCAGACCATC 360  
 GTCTTCCAG GAAGCACCGG GCACATCGTG GTCACTCTAG CAAGCAGCAC TTCTGTCAAC 420  
 40 GGGCAAGTCC TCGCGCGACC ACACAACCTA ATGCGTCGAA GCATGTGAG CCTCTTGTAT 480  
 ACCTACCAAA AATGTGGACT CAAGCGTAAG AGCGAGGAGA TCGAGAACAC AAGCAGCGTG 540  
 CAGATCATCG AGGAGCATCC ACCCATGATT CAGAATAATG CAAGCGGGGC CACTGTGCC 600  
 ACTGCCACCA CGTCTACTGC CACCTCCAAA AACAGCGGCT CCAACAGCGA GGGCGACTAT 660  
 CAGCTGGTGC AGCATGAGGT GCTGTGCTCC ATGACCAACA CTACGAGGT CTTAGAGTTC 720  
 45 TTGGGCGGAG GGACGTTTGG ACAAGTGGTC AAGTGTGGA AACGGGSCAC CAATGAGATC 780  
 GTAGCCATCA AGATCCTGAA GAACCGCCCA TCCTATGCCC GACAGGTCA GATTGAAGTG 840  
 AGCATCTTGG CCCGTTGAG CACGGAGAGT GCGATGACT ATAACTTCGT CCGGGCCTAC 900  
 GAATGCTTCC AGCAACAAGAA CCACACGTGC TTGGTCTTCG AGATGTTTGA GCAGAACCTC 960  
 TATGACTTTC TGAAGCAAAA CAAAGTTAGC CCTTGCCCC TCAATATCAT TCGCCAGATT 1020  
 50 CTCCAGCAGG TAGCCACAGC CCTGATGAAA CTCAAAAGCC TAGGTCTTAT CCACGCTGAC 1080  
 CTCAAACAGG AAAACATCAT GCTGGTGGAT CCACTAGAC AACCATACAG AGTCAAGTTC 1140  
 ATGACTTTTG GTTCAGCCAG CCACGCTTCC AAGGCTGTGT GCTCCACCTA CTTCAGTTC 1200  
 AGATATTACA GGGCCCTGTA GATCATCCTT GGTTTACCAT TTTGTGAGGC AATTGACATG 1260  
 TGGTCCCTGG GCTGTGTTAT TGCAAGATTG TTCTGGGTTT GGCGTTTATA TCCAGGAGCT 1320  
 55 TCGGAGTATG ATCAGATTCG GTATATTTC AACAACAGG GTTTGCCCTG TGAATATTTA 1380  
 TTAAGCCCGG GGACAAAGAC AACTAGTATT TTCAACCGTG ACACGGAATC ACCATATCCT 1440  
 TTGTGGAGAC TGAAGACACC AGATGACCAT GAAGCAGAGA CAGGATTAA GTCAAAAGAA 1500  
 GCAAGAAAGT ACATTTTCAA CTGTTTAGAT GATATGGCCC AGGTGAACAT GACGACAGAT 1560  
 TTGGAAGGGA GCGACATGTT GGTAGAAAAG GCTGACCGGC GGGAGTTTAT TGACCTGTTG 1620  
 60 AAGAAGATGC TGACCATTGA TGCTGACAAG AGAATCACTC CAATCGAATC CCTGAACCAT 1680  
 CCTTTGTACA CCATGACACA CTACTCGAT TTTCGCCACA GCACACAGCT CAATCATGTT 1740  
 TTCCAGAACA TGGAGATCTG CAAGCGTGGG GTGAATATGT ATGACACGGT GAACCCAGAGC 1800  
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 65 TTAGCCAATC CCGAAGTCTC CATACTAAAC TACCATCTA CACTCTACCA GCGCTCAGCG 1980  
 GCATCCATGG CTGACGTGGC CCAGCGGAGC ATGCCCTTGC AGACAGGAAC AGCCAGATT 2040  
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 TTGACGGCCT CTCCCTCTAA GCACGCTGGC TACTCGGTGC GAATGGAATA TGCAATTCCC 2160  
 70 ATCGTCACTC AAGCCCCCAG AGCTCAGCCT CTTCAGATCC AACCAAGTCT GCTTGGCCAG 2220  
 CAGGCTTGGC CAAGTGGGAC CCAGCAGATC CTGCTTCCC CAGCATGGCA GCAACTGACT 2280  
 GGAGTGGGCA CCCACACATC AGTGACGATC GCCACCGTGA TTCCCGAGAC CATGGCAGGC 2340  
 ACCACGACG TGCGGAGCTG GAGAAATACG CATGCTCAGG GAAGCCATTA TAATCCCATC 2400  
 ATGCACAGC CTGCACTATT GACCGGTCTT GTGACCTTTC CAGCAGACA GCGCTTAAAT 2460  
 GTGGGTGTGG CCGACGTGAT GCGGCGAGCAG CCAACCCAGCA CCACCTCCTC CCGGAAGAGT 2520  
 75 AAGCAGCACC AGTCACTCTG GAGAAATGTC TCACCTGTG AGGTGTCTCT CTCTCAGGCC 2580  
 ATCAGCTCCC CACAGCGATC CAAGCGTGTG AAGGAGAACA CACTCCCGCG CTGTGCCATG 2640  
 GTCCACAGTA GCGCGGCTGC CAGCACCTCG GTCACTGTG GTTGGGCGCA CGTGGGCTCC 2700  
 AGCACACCC GGAACGCGCA GCGGCGAGCA ATTGTCAATC CCGACACTCC CAGCCCCAGC 2760  
 GTCAAGCTCA TCACACTCAG CAGTGACACG GACGAGGAGG AGGAACAGAA ACACGCCCC 2820  
 80 ACCAGCACTG TCTCCAAGCA AAGAAAAAAC GTCATCAGCT GTGTCAAGT CCACGACTCC 2880  
 CCTACTCCG ACTCTCCAG CAACACCAGC CCTACTCCG TGCAGCAGG TGTGGGCAC 2940

	AACAATGCCA	ATGCCTTTGA	CACCAAGGGG	AGCCTGGAGA	ATCACTGCAC	GGGGAACCCC	3000
	CBAACCATCA	TCGTGCCACC	CCTGAAAACC	CAGGCCAGCG	AAGTATTGGT	GGAGTGTGAT	3060
	AGCCTGGTGC	CAGTCAACAC	CAGTCAACAC	TCGTCTCTCT	ACAAGTCCAA	GTCTCTCAGC	3120
5	AAGTGAACCT	CCACCAGCGG	TCACTCTTCA	GGGAGCTCAT	CTGGAGCCAT	CACCTACCGG	3180
	CAGCAGCGGC	CGGGCCCCCA	CTTCAGCAG	CAGCAGCCAC	TCAATCTCAG	CCAGGCTCAG	3240
	CAGCACATCA	CCACGGACCG	CACTGGGAGC	CACCGAAGGC	AGCAGGCCCTA	CATCACTCCC	3300
	ACCATGGCCC	AGGCTCCGTA	CTCCTTCCCG	CACAACAGCC	CCAGCCACCGG	CACGTGTGAC	3360
	CCGCACTGGC	CTGCAAGCCG	TCGCGCTGCG	CACCTCCCCA	CCGACGCCCA	CCTCTACACC	3420
	TACACTGGCG	CGGGGGCCCT	GGGCTCCACC	GGCACCCTGG	CCCACTCTGGT	GGCCTGCGAA	3480
10	GGCTCTGGCG	GCCACACCGT	GCAGCACACT	GCCTACCCAG	CCAGCATCTG	CCACCAGGTC	3540
	CCCGTGAGCA	TGGGCCCCCG	GGTCTGTCCT	TGCCCCACCA	TCCACCCGAG	TCAGTATCCA	3600
	GCCCAATTG	CCCACAGAC	CTACATCAGC	GCCTCGCCAG	CCTCCACCGT	CTACACTGGA	3660
	TACCCACTGA	GCCCCGCCAA	GGTCAACCAG	TACCCTTACA	TATAAAGCT	GGAGGGGAGG	3720
	GAGGGAAGGA	GGGAGGGAGA	GAATGGCCCG	AGGAGGAGG	GAGAGAAGGA	GGGAGGGCGT	3780
15	CCTGGGACCG	TGGGGCTGG	CCTTTTATAC	TGAAGATGCC	GCACACAAAC	AATGCAAAAG	3840
	GGGCAGGGGC	GGGGGGGGGG	GGGGCAGAGG	GCAGGGGGAC	GGGTCTGGGAC	ACCAGTGAAA	3900
	CTTGAACCCG	GAAGTGGGAG	GACGTAGAGG	AGAGAAGAGA	ACATTTTTAA	AAGGAAGGGA	3960
	TTAAGAGGGG	TGGGAAATCT	ATGTTTTTTA	TTTTAAAAAA			
20	SEQ ID NO:282 PC12 Protein sequence: Protein Accession #: NP_073577						
25	MAPVYEGMAS HVQVSPHTL QSSAFCSVKK LKVEPSSNWD MTGYGSHSKV YSQSKNIPPS 60						
	QPASTTVSTS LFPVNPISLPY EQTIVFGST GHIVTSASS TSVTGQVLGG PHNLMRRSTV 120						
	SLLDITYQKCG LKRRSEIEEN TSSVQIEEH PPMIQNNASG ATVATATTST ATSKNSGNS 180						
	EGDYQLVQHE VLCSMTNTYE VLEFLGRGTF GOVVKCWKRQ TNEIVAAIL KNRPSYARQG 240						
	QIEVSILARL STESADDYFN VRAIECFQHK NHTCLVFEML EQNLYDFLKQ NKFSPLFLKY 300						
30	IRPVLOQVAT ALMKLKSGL IHADLKPENI MLVDPSRQFY RVKVIDRQSA SHVSKAVCST 360						
	YLQRYQASPS EIMGLPFCE AIDMWSLGCV IAEFLGWPL YPGASEYDQI RYISQIQGLP 420						
	AEYLLSAGTK TIRFNRDITD SPYPLWRLKT PDDHBAETGI KSKBARKYIF NCLDDMAQVN 480						
	MTDLEGS DM LVEKADREF IDLLKKMLTI DADKRITPIE TLNHPFVTMT HLLDFPHSTH 540						
	VKSCFQNMEL CKRRVNMMDT VNQSKTPIIT HVAEPTSTNL TMFTFNQLIT VHNQAPSSTS 600						
35	ATISLANPEV SILNYPSTLY QPSAASMAAV AQRSMPLQTG TAQICARFDP FQALIVCPP 660						
	GFQGLQASPS KHAGYSYRME NAVPIVQAP GAQLQIQPG LLAQQAQWPSG TQQLLPPAW 720						
	QQLTGVAHT SVQEHATVPE TMAGTQQLAD WRNTHAHGSH YNPMQPPAL LTGHVTLPA 780						
	QPLNVGVAVH VLRQOQPTSTS SRKSKQHQS VNRVSTCEVS SSQAISPPQR SKRVKENTFP 840						
	RCAMVHSSPA CSTSVTCGWG DVASSTIRER QRQITVIDT PSPTVSITI SSDTDEEBEQ 900						
40	KHAPTSTVSK QRKNVISCVT VHDSPYSDSS SNTSPYSVQQ RAGHNNANAF DTKGLENHC 960						
	TGNPTITVP PLKTQASEVL VECDSLVPVN TSHSSSYKS KSSSNVTSTS GHSSGSSGA 1020						
	ITYRQRPQP HQQQQPLNL SQAQQHITD RTGSHRRQQA YITPMAQAP YSFPHNSPSH 1080						
	GTIVHQLPAA AAAAHLPTQP HLYTYTAPAA LGSTGTVAHL VASQGSARHT VQHTAYPASI 1140						
	VHQVPVSMGP RVLSPITHP SQYPAQFAHQ TYIASPAST VYTGYPSPA KYNQYFYI						
45	SEQ ID NO:283 PB1 DNA SEQUENCE						
	Nucleic Acid Accession: NM_017700						
	Coding sequence: 147-606 (underlined sequence corresponds to start and stop codon)						
50	1	11	21	31	41	51	
	AGTCACAGCC	AGGTAACCTT	GAGTGAAGC	GGTTTAGTTA	GAAGGGAGCA	GATAAACTCG	60
	TCACCTAGT	AGCTTTAACC	CTCACCTGTA	GGCACCTTAG	CAATCAGCCA	TTGCTGCAA	120
	GCTTCCAAG	CTGTCTTTG	CCTAATATGG	AGCCCAAGA	AGCCACTGGG	AAAGAAAACA	180
55	TGGTACCAA	GAAGAAAGAT	CTGGCTTCT	TGAGGTCTAG	ACTCTATATG	CTGGAGAGAA	240
	GGAAAGATGA	CACGTGTGGT	GAGAGCAGTG	TTTCTGGGGA	CCACTCTGGC	ACCTTGAGGA	300
	GGAGCCATC	TGACAGGACC	GAATACAACC	AGAAATTACA	AGAAAGATG	ACTCCACAGG	360
	GTGAGTGTTC	TGTAGCTGAG	ACCTTAACCC	CAGAGGAAGA	GCATCATATG	AAGAGGATGA	420
	TGGCAAGCG	GGAAAGATC	ATTAAGGAGC	TGATACAGAC	AGAAAGGAT	TATCTCAATG	480
60	ATCTAGAGCT	GTGTGTAGG	GAAATGGTTC	AGCCCTGAG	AAATAAAAAG	ACTGATAGGC	540
	TGGATGTGGA	TAGCTGTGTT	AGCAACATG	AGTCCGTGCA	TCAGATATCA	GCCAAGCTGC	600
	TGTCTATTGT	GGAAGAGGCC	ACAACAGAGC	TGGAAACGGC	CATGCAAGTA	ATTGGAGAG	660
	TATTCTTGCA	GATTAAAGGG	CCACTGGAAG	ATAATTTATA	AATCTACTGC	TATCACCATG	720
	ATGAAGCACA	TAGTATACG	GAGTCTTATG	AAAAGGAAGA	AGAGCTGAAG	GAACATTTGA	780
65	GCCACTGTAT	CCACTCTCTA	AAGTAAGGCC	TTTTCAAATG	ATGATTCCCA	TCTCTCTCA	840
	TTTGCTTATG	AGGGAACATT	TTAAATGGAT	GTAGATGAAA	GGTCTCACAT	AAATCTCTATG	900
	TTTATGAGA	CTTCTGGGA	GCTCTGCTTT	GACATTCCTT	TATAAAAAGC	TGACATGCCA	960
	GGAAGCCCTGA	TTGACTTTTT	TTCCCTCTGC	GAGAATGACT	AAAAATAACA	TGGAAAGA	1020
	TTTAGAGCTC	TGCAGCGATT	GAAAAATGCA	ATATCAAAAT	ATAAAATGTG	GAGAAAAGC	1080
70	CTCTCTTTGA	AGCTATTTGA	ACTTGCCTGG	CGCCACGTAG	TTCAAGGATT	ATGTGAGATA	1140
	ACACGTGGCC	CCATGACCAC	TGGAGCAGAT	GGGTTAATGG	AGTTAGGGGA	ATGGCTTACA	1200
	ACTCTGCATG	GCCGTCTTCT	TTCCCCAAAC	TCACTGTGGG	GAGATGGGTG	AAGACAAGT	1260
	AGGCCTTGT	AAAAGTTAGT	TCAGAACAAAT	TACTCATGCC	TTCTTTTCTC	ATCCCTAAAA	1320
	CATTGTGGG	GGAGCTACAC	AATGTACTTT	TTCTTTTCTA	GAGGAAGTAT	CTATTCACGT	1380
75	TGAAAATCTG	AAAAATATAA	CAAAGTATGT	GTAAGATAAA	AACCCCTTGC	TATTTCAAAA	1440
	AAAAAAAAAA	AAAAAAAAAA	AAAA				
	SEQ ID NO:284 PB1 Protein sequence: Protein Accession #: NP_060170						
80	1	11	21	31	41	51	

5 MEPKKATGKE NMVTKKKNLA FLRSRLYMLE RRTDTVVES SVSGDHSQTL RRSQSDRTEY 60  
 NQKLQEKITP QGECVAVETL TPEEEHMKR MMAKREKIK ELIQTEKDYI NDLELCVREV 120  
 VQPLRNKRTD RLDVDSLPSN IESVHQISAK LLSLLEBATT DVEPANQVIG EVFLQIKGPI 180  
 EDIYKIYCYH HDEAHSILES YEKEELKEH LSHCIQSLK

## SEQ ID NO:285 PBQ9 DNA SEQUENCE

10 Nucleic Acid Accession#: X86534  
 Coding sequence: 523-2676 (underlined sequence corresponds to start and stop codon)

15 1 11 21 31 41 51  
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 TTCTTACACT TTTCCTGCGC TAGAGCAGCG AGCAGCCTGG AACAGACCCA GGCGGAGGAC 180  
 ACCTGTGGGG GAGGGAGCGC CTGGAGGAGC TTAGAGACCC CAGCCGGGCG TGATCTCACC 240  
 ATGTGCGGAT TTGCGAGGCG CGCCTGGGAG CTGCTAGAGA TCCGGAAGCA CAGCCCCGAG 300  
 GTGTGCGAAG CCACCAAGAC TCGCGCTCTT GGAGAAAGCG TAGCAGGGGG GCCACCCGGG 360  
 TCTCCGGCCT GTCTGCACCC TGTGCGCTGA GCTGCGCTGAC AGTGACAATG ACATCCCACT 420  
 TACCATGTTC CTTGAATTGA TAGTGGCTTC TGTTTGTTCAG TCTCATATAA GAACACAGCC 480  
 TCATCAGGAG GAGATCGCAG CAGGTAAGA GACACCAACA CCATGTTCTG CACGAAAGCTC 540  
 AAGGATCTCA AGATCAGCAG AGAGTGTCTT TTCTCCTTAC TGGCACCAGG TCAAGTCTCT 600  
 AACGAGTCTT CAGAGGAGGC AGCAGGAAGC TCAGAGAGCT GCAAGCAAC CGTGCCCATC 660  
 TGTCAAGACA TTCTTGAGAA GAACATACAA GAAAGTCTTC CTCAAAGAAA AACAGTCCGG 720  
 AGCCGAGTCT ATCTTCACAC TTTGGCAGAG AGTATTTGCA AACTGATTTT CCCAGAGTTT 780  
 GAACGCGCTG ATGTGTGCACT TCAGAGACAA TTGGCAAGC ACAAAATAAA AGAAGCAGG 840  
 AAATCTTTGG AAAGAGAAGA CTTTGAAGAA ACAATTGCAG ACCAAGCAGT GCAGCAGAGT 900  
 CCAGTGGAGT TATCAAAAGAA TCTCTTGGTG AAGAGGTTTT TAAATATGT TACGAGGAAG 960  
 ATGAAACCAT CCTTGGGGTG GTTGGAGGCA CCTTAAAGA TTTTAAACA GCTTCAGTAC 1020  
 CCTTCTGAAA CAGAGCAGCC ATTGCCAAGA AGCAGGAAA AGGGGCGAGCT TGAGGACGCC 1080  
 TCCATCTCAT GCCTGGATAA GGAGGATGAT TTCTACATG TTTACTACTT CTTCCTTAAG 1140  
 AGAACCACCT CCTGATTTCT TCCCGCATC ATAAAGGCAG CTGCTCAGCT ATTATATGAA 1200  
 ACGGAAGTGG AAGTGTGCTT AATGCCCTCC TGTCTCCATA ATGATTGCAG CGAGTTTGTG 1260  
 AATCAGCCCT ACTTGTGTA CTCCGTTTAC ATGAAAGACA CCAAGCCATC CTTGTCCCCC 1320  
 AGCAAAACCC AGTCTCTGCT GGTGATTCCC ACATCGCTAT TCTGCAAGAC ATTTCATC 1380  
 CATTTCTATG TTGACAAAGA TATGACAATT CTGCAATTG GCAATGGCAT CAGAAGGCTG 1440  
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 AAAATCAACC AGACCTTTAG CGGATCATG ACTATGTGTA ATATGCAGTT TGTGTACGA 1560  
 GTGAGGAGAT GGGACAACCT TGTGAAGAAA TCTTCAAGGG TTATGGACCT CAAAGGCCAA 1620  
 ATGATCTACA TTGTTGAATC CAGTGAATC TTGTTTGTG GGTCAACCTG TGTGGACAGA 1680  
 TTAGAAGATT TTACAGGAGC AGGGCTCTAC CTCTCAGACA TCCCAATTCA CAATGCATG 1740  
 AGGAGTGTGG TCTTAATAGG GGAACAAGCC CAGAGCTCAAG ATGGCCTGAA GAAGAGGCTG 1800  
 GGAAGCTGTA AGGCTACCTT TGAGCAAGCC CACCAAGCCC TGGAGGAGGA GAAGAAAAG 1860  
 ACAGTAGACC TTCTGTGCTC CATATTTCCC TGTGAGGTTG CTCAGCAGCT GTGGCAAGGG 1920  
 CAAGTTGTGC AAGCCAAGAA GTTCAGTAAT GTCAOACATC TCTTCTCAGA CATCGTTGGG 1980  
 TTCCTGCTCA TCTGCTCCA GTGCTCACCG CTGCAGGTCA TCACCATGCT CAATGCATG 2040  
 TACACTGTGG TCGACAGCA GTGTGGAGAG CTGGATGTCT ACAAGGTGGA GACCATTTGG 2100  
 ATGCTTATGT TGTGGCTTGG GGGATTACAC AAAGAGAGTG ATACTCATGC TGTTCAGATA 2160  
 GCGCTGATGG CCTGCAAGAT GATGGAGCTC TCTGATGAAG TTATGTTCC CCATGGAGAA 2220  
 CCTATCAAGA TCGCAATTGG ACTGCATCTT GGATCAGTTT TTGCTGGCGT CGTTGGAGTT 2280  
 AAAATGCCCC GTTACTGTCT TTTTGAAGC AATGTCACTC TGGCTAACAA ATTTGAGTCC 2340  
 TGCAGTGTAC CACGAAAAT CAATGTACAG CCAACAACCT ACAGATTACT CAAAGACTGT 2400  
 CCTGGTTTCG TGTTTACCCC TCGATCAAGG GAGGAACCTC CACCAACTT CCTAGTGA 2460  
 ATCCCCGAAA TCTGCCATTT TCTGGATGCT TACCAACAAG GAACAACCTC AAAACCATGC 2520  
 TTCCAAAAGA AAGATGTGGA AGATGCAGC CAATTTTTTA GGCAAGCAT CAGGAATAGA 2580  
 TTAGCAACCT ATATACCTAT TTATAAGTCT TTGGGTTTGG ACTCATTGAA GATGTGTAGA 2640  
 GCCTCTGAAA GCACTTTAGG GATTGTAGAT GGTAAACAAG CAGTATTAAA ATTTTCAGGAG 2700  
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 AGTCAATTGT ACAAACTGAT GGAGTCACCT GCAATCTCAT ATCTGTTGG AATGCCATGG 2940  
 TTATTAAGT GTGTTTGTGA TAGTTGTCTT CAAAAA AAAA AAAA 3000  
 AAAA

## SEQ ID NO:286 PBQ9 Protein sequence:

Protein Accession #: Q02108

70 1 11 21 31 41 51  
 MFCTKLKDLK ITGECPPSLL APGQVPNESS EEAAGSSESC KATVPICQDI PERNIQESLP 60  
 QRKTSRSRVY LHTLAESICK LIFPEPERLN VALQTLAKH KIKESRSLSE REDPERTIAE 120  
 QAVAAQVPEV VKESLGEV FKICYEEDEN ILGVGGTLK DFLNSFSTLL KQSSHCQEAG 180  
 KRGRLEDASI LCLDKEDDFL HVYFFPERRT TSLILPGIHK AAARVLYETE VEVSLMPPCF 240  
 HNDCESEFVNQ FYLLYSVHK STKPSLSPSK PQSSLVIPIS LFCKTPPFHP MFDKDMTILQ 300  
 PGNIGIRRLN RRDPGQKPNF EBYFEILTFK INQTFSGIMT MLNMQFVVRV RRDNSVKK 360  
 SRVMDLKGQM IYIVESSAIL FLGSPCVDR L EPTFGRGLYL SDIPIENALR DVVLIGEQAR 420  
 AQDGLKRLG KLRATLEQAH QALEEEKKT VDLCSIFPC EVAQQLWQGG VQAKKFSNV 480  
 80 TMLFSDIVGF TAICSQCSPL QVTMLNALY TRFDQCQCEL DVYKVTIGD AYCVAAGLHK 540

ESDTHAVQIA LHALKMMELS DEVMSPHGEP IKMRIGLHSG SVFAGVVGK MPRYCLFGNN 600  
 VTLANKPESC SVPRKINVSP TTYRLKDCP GFVFTPRSRE ELFPNFSEI FGICHFLDAY 660  
 QQGTNSKPCF QKQDVEDGNA NFLGRASGTD

5

## SEQ ID NO:287 PFD2 DNA SEQUENCE

Nucleic Acid Accession#: NM\_000720

Coding sequence: 119-6664 (underlined sequence corresponds to start and stop codon)

10

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1	11	21	31	41	51	
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GATGATGATG	ATGATGATGA	AAAAAATGCA	GCATCAACGG	CAGCAGCAAG	CGGACCACGC	180
GAAACGAGCA	AATATGCAA	GAGGCACCAG	ACTTCCTCTT	TCTGGTGAAG	GACCAACTTC	240
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ACAGGCCAAG	GCTGCCCAAA	CTATGAGCAC	CTCTGCACCC	CCACCTGTAG	GATCTCTCTC	360
CCAAAGAAAA	CGTCAGCAAT	ACGCCAAGAG	CAAAAACAG	GGTAACCTCGT	CCAACAGCCG	420
ACCTGCCCGC	GCCTTTTCT	GTTTATCACT	CAATAACCCC	ATCCGAAGAG	CCTGCATTAG	480
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GGCCTTAGCT	ATTTCATCC	CATTCCCTGA	AGATGATTCT	AATTCAACAA	ATCATAACTT	600
GGAAAAAGTA	GAATATGCC	TCCTGATTAT	TTTTACAGTC	GAGACATTTT	TGAAGATTAT	660
AGCGTATGGA	TTATGTCTAC	ATCCTAATGC	TTATGTTAGG	AATGGATGGA	ATTTACTGGA	720
TTTTGTGTATA	GTAATAGTAG	GATTGTTTAG	TGTAAITTTG	GAACAATTAA	CCAAAGAAAC	780
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CTTTCGAGTG	TTGGAGCCAC	TTCGACTAGT	GTGAGGGGTG	CCCACTTTAC	AAGTTGTCTC	900
GAACTCCATT	ATAAAGCCCA	TGGTCCCTCT	CTCTCACATA	GCCTTTTGGT	TATTATTGTG	960
AATCATTAAT	TATGCTATTA	TAGGATTGGA	ACTTTTATT	GGAAAAATGC	ACAAAACATG	1020
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GAATGGACCG	CAGTGTACTG	CCAATGGCAC	GGAAATGTAG	AGTGGCTGGG	TTGGCCCGAA	1140
CGGAGGCATC	ACCAACTTTG	ATAACTTTGC	CTTTGCCATG	CTTACTGTGT	TTCACTGATG	1200
CACCATGGAG	GGCTGGACAG	ACGTGCTCTA	CTGGTAAAT	GATGCGATAG	GATGGGAATG	1260
GGCATGGGTG	TATTTTGTGA	GTCTGATCAT	CTTTGGCTCA	TTTTTCGTCC	TTAACTTGGT	1320
TCTTGGTGTG	CTTAGTGGAG	AATTCTCAA	GGAAAGAGAG	AAGCAAAAG	CACGGGGAGA	1380
TTTCCAGGAG	CTCCGGGAGA	AGCAGCAGCT	GGAGGAGGAT	CTAAAGGGCT	ACTTGGATTG	1440
GATCAGCCAA	TCGATCCGGA	GAATGAGGAA	GAAGGAGGAG	AGGAAGGCCA		1500
ACGAAATACT	AGCATGCCCA	CCAGCGAGAC	TGAGTCTGTG	AACACAGAGA	ACGTGAGCGG	1560
TGAAGGGGAG	AACCGAGGCT	GCTGTGGAAG	TCTCTGGTGC	TGGTGGAGAC	GGAGAGCGCG	1620
GGCCAAAGCG	GGGCCCTCTG	GGTGTGCGCG	GTGGGGTCAA	GCCATCTCAA	AATCCAAACT	1680
CAGCCGACGC	TGGCGTCGCT	GGAAACCGATT	CAATCGCAGA	AGATGTAGGG	CCGCCGTGAA	1740
GTCTCTTGCT	TTTACTGTGC	TGGTTATCGT	CTGGTGTGTT	CTGAACACCT	TAACCAATTG	1800
CTCTGAGCAC	TACAATCAGC	CAGATTGGTT	GACACAGATT	CAAGATATTG	CCAAACAAAGT	1860
CCCTCTGGCT	CTGTTCACCT	GCGAGATGCT	GCTAATAATG	TACAGCTTGG	GCCTCCAAAGC	1920
ATATTCTGCT	TCTCTTTTCA	ACCGGTTTGA	TTGCTTCGTG	GTGTGTGGTG	GAATCACTGA	1980
GACGATCCTG	GTGGAAGTGG	AAATCATGTC	TCGCCCTGGG	ATCTCTGTGT	TTCCGTTGTT	2040
CGCCCTCTTA	AGATCTTCA	AAGTGACCAG	GCATCGGACT	TCCTTGAGCA	ACTTAGTGGC	2100
ATCCTTATTA	AATCCATGA	AGTCCATCGC	TTCCGCTTTG	CTTCTGCTTT	TTCTCTTCAT	2160
TATCATCTTT	TCTTTGCTTG	GGATGCAAGT	GTTTGGCGGC	AAGTTTAATT	TTGATGAAC	2220
CGAAACCAAG	CGGAGCACTT	TTGACAAATT	CCCTCAAGCA	CTTCTCACAG	TGTTCCAGAT	2280
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ATCCTCTTCA	GGAATGATCG	TCTGCATCTA	CTTCATCATC	CTCTTCATT	GTGTAACATA	2400
TATCTTACTG	AATGTCTCTT	TGGCCATCGC	TGTAGACAAT	TTGGCTGATG	CTGAAAGTCT	2460
GAACACTGCT	CAGAAAGAAG	AAGCGAAGA	AAAGGAGAGG	AAAAAGATTG	CCAGAAAGA	2520
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CAAGGTTACA	ATTGATGACT	ATAGAGAAGA	GGATGAAGAC	AAGGACCCCT	ATCCGCCCTTG	2640
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CGGACCCCGT	CCTGGAAGGA	TCTCGAGATT	GAACATGAAG	GAAAAAATTG	CCCCCATCCC	2760
TGAAGGGAGC	GCTTCTTCA	TTCTTAGCAA	GACCAACCCG	ATCCCGGTAG	GCTGCCACAA	2820
GCTCATCAAC	CACCACATCT	TCACCAACCT	CATCTTTGTC	TTCAATCATG	TGAGCAGCGC	2880
TGCCCTGGCC	GCAGAGGACC	CCATCCGCAG	CCACTCTCTC	CGGAACACGA	TACTGGGTTA	2940
CTTTGACTAT	GCCTTCACAG	CCATCTTTAC	TGTTGAGATC	CTGTTGAAGA	TGACAACTTT	3000
TGGAGCTTTC	CTCCACAAG	GGGCCTTCTG	CAGGAACATC	TTCAATTGTC	TGGATATGCT	3060
GGTGGTTGGG	GTGTCTCTGG	TGTCAATTGG	GATTCATCC	AGTGCCATCT	CCGTTGTGAA	3120
GATTCTGAGG	GTCTTAAGGG	TCTTGGCTCC	CCTCAGGGCC	ATCAACAGAG	CAAAAGGACT	3180
TAAGCAGCTG	GTCCAGTGGC	TCTTGGCTGC	CATCCGGACC	ATCGGCAACA	TCATGATCGT	3240
CACCTACCTC	CTGCAGTTCA	TGTTTGGCTG	TATCGGGGTC	CAGTTGTCTA	AGGGGAAGTT	3300
CTATCGCTGT	ACGGATGAAG	CCAAAGTAA	CCCTGAAGAA	TGCAGGGGAC	TTTTCTATCT	3360
TACAAAGGAT	GGGGATGTTG	ACAGTCTGTG	GGTCCGTGAA	CGGATCTGGC	AAAAAGTGA	3420
TTTCAACTTC	GACAAAGTCC	TCTCTGCTAT	GATGGCGCTC	TTCAAGTCTC	CCAGTTTGA	3480
GGGCTGGCCT	GGGTTGCTGT	ATAAGCCAT	CGACTCGAAT	GGAGAGAACA	TCGGCCCAAT	3540
CTACAACCAAC	CGCGTGAGGA	TCTCCATCTT	CTTCATCATC	TACATCATCA	TTGTAGCTTT	3600
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CATGCTCTTC	ACGGGGTGTG	TCACCGTGA	GATGGTTTGG	AAAGTCATCG	CATTTAAGCC	3960
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TATAGACGTG	GCCCTCAGCG	AAGCGGACCC	AACGAAAGT	GAAAAATGCC	CTGTCCCAAC	4080

5	TGCTACACCT	GGGAACCTCTG	AAGAGAGCAA	TAGAATCTCC	ATCACCTTTT	TCCCTCTTTT	4140
	CCGAGTGTATG	CGATTGTGTA	AGCTTCTCAG	CAGGGGGGAA	GGCATCCGGA	CATTGTCTGTG	4200
	GACTTTTATT	AAGTCTTTTC	AGGCGCTCCC	GTATGTGGCC	CTCCTCATAG	CCATGCTGTT	4260
	CTTCATCTAT	GGGTCTATTG	GCATGCAGAT	GTTTGGGAAA	GTTGCCATGA	GAGATAACAA	4320
	CCAGATCAAT	AGGAACAATA	ACTTCCAGAC	GTTTCCCAG	GCGGTGCTGC	TGCTCTTCAG	4380
	GTGTGCAACA	GGTGAGGCCT	GGCAGGAGAT	CATGCTGGCC	TGTCTCCCAG	GGAGCTCTG	4440
	TGACCTCTGAG	TCAGATTACA	ACCCCGGGGA	GGAGTATACA	TGTGGGAGCA	ACTTTGCCAT	4500
	TGCTATTCTC	ATGATTTTTC	ACATGCTCTG	TGCATTCTG	ATCATCAATC	TGTTTGTGGC	4560
10	TGTCATCATG	GATTAATTTCG	ACTATCTGAC	CCGGGACTGG	TCTATTTTGG	GGCTCAACCA	4620
	TTTAGATGAA	TTCAAAAGAA	TATGCTCAGA	ATATGACCTT	GAGGCAAGG	GAAGGATAAA	4680
	ACACCTTGAT	GTGGTCACTC	TGCTTCGACG	CATCCAGCCT	CCCTGGGGT	TTGGGAAGTT	4740
	ATGTCCACAC	AGGGTAGCGT	GCAAGAGATT	AGTTGCCATG	AACATGCCTC	TCAACAGTGA	4800
	CGGGACAGTG	ATGTTTAATG	CAACCTGTGT	TGCTTTGGTT	GAAACGGCTC	TTAAGATCAA	4860
	GACCCAGAGG	AACCTGGAGC	AAGCTAATGA	AGAATCTCGG	GCTGTGATAA	AGAAAATTTC	4920
15	GAAGAAACCC	AGCATGAAT	TACTTGACCA	AGTTGTCCCT	CCAGTGGTGT	ATGATGAGGT	4980
	AACCGTGGGG	AAATTTCTATG	CCACTTTCCT	GATACAGGAC	TACTTTAGGA	AATTCAAGAA	5040
	ACGGAAGAAA	CAAGGACTGG	TGGGAAAGTA	CCCTGCGAAG	AACACCACAA	TTGCCCTACA	5100
	GGCGGGATTA	AGGACACTGC	ATGACATTGG	GCCAGAAATC	CGCGCTGCTA	TATCTGTGTA	5160
	TTTGGACAGT	GAGGAGCCTG	AGGAAACAAA	ACGAGAAGAA	GAAGATGATG	TGTTCAAAAG	5220
20	AAATGTGCC	CTGCTTGGAA	ACCATGTCAA	TCATGTTAAT	AGTGATAGGA	GAGATTCCTT	5280
	TCAGCAGACC	AATACCAACC	ACCGTCCCTT	GCATGTCCAA	AGGCTTCAA	TTCCACCTGC	5340
	AAATGATACT	GAGAAACCCG	TGTTTCTCTC	AGCAGGAAAT	TGGTGTGTG	ATAACCATCA	5400
	TAACCATTAAT	TCCATAGGAA	AGCAAGTTC	CACCTCAACA	AATGCCAATC	TCAATAATGC	5460
	CAATATGTCC	AAAGCTGCC	ATGGAAGCG	GCCAGCATT	GGGAACCTTG	AGCATGTGTG	5520
25	TGAAATAGG	CATCATTTCT	CCACAAAGCA	TGACCGGGAG	CCTCAGAGAA	GCTCCAGTGT	5580
	GAAGAAGACC	CGCTATTATG	AAACTTACAT	TAGGTCCGAC	TCAGGAGATG	AACAGCTCCC	5640
	AACATTTTGC	CGGGAAGACC	CAGAGATACA	TGGCTATTTC	AGGGACCCCT	ACTGCTTGGG	5700
	GGAGCAGGAG	TATTTCACTA	GTGAGGAATG	CTACGAGGAT	GACAGCTCCG	CCACCTGGAG	5760
30	CAGGCAAAAC	TATGCTACT	ACAGCAGATA	CCACGCCAGA	AACATCGACT	CTGAGAGGCC	5820
	CCGAGGCTAC	CATCATCCCC	AAGGATTCTT	GGAGGACGAT	GACTCGCCCG	TTTGCTATGA	5880
	TTCAAGGAGA	TCCTCAAGGA	GAGGCCCTACT	ACCTCCACCC	CCAGCATCCC	ACCGGAGATC	5940
	CTCCTTCAAC	TTTGAAGTCC	TGCGCCGGCA	GAGCAGCCAG	GAAGAGGTCC	CGTCTCTCC	6000
	CATCTTCCCC	CATCGCACGG	CCCTGCCCTC	GCATCTAATG	CAGCAACAGA	TCATGGCAGT	6060
35	TGCCCCGCTA	GATTCAAGTA	AAGCCAGAA	GTACTACCCG	AGTCACTCGA	CCCGGTCTGT	6120
	GGCCACCCCT	CCAGCAACCC	CTCCCTACCG	GGACTGGACA	CCGTGCTACA	CCCCCTCGAT	6180
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	CAGCTCTGGG	TACACAGACG	AGCCCCGACAT	CTCTTACCGG	ACTTTACAC	CAGCCAGCCT	6300
	GACTGTCCCC	AGCAGCTTCC	GGAAACAAAA	CAGCGACAAG	CAGAGGAGTG	CGGACAGCTT	6360
	GGTGGAGGCA	GTCTGATAT	CCGAAGGCTT	GGGACGCTAT	GCAAGGGACC	CAAAATTTGT	6420
40	GTCAACAACA	AAACACGAAA	TGCGTGTATG	CTGTGACCTC	ACCATCGACG	AGATGAGAGG	6480
	TGCAGCCAGC	ACCTTGCTTA	ATGGGAACGT	CCCTCCCCGA	CCCAACGGGG	ATGTGGGCC	6540
	CCCTTCACAC	CGGCAGGAGT	ATGAGCTACA	GGACTTTGGT	CCTGGCTACA	GCGACGAAGA	6600
	GCCAGACCTT	GGGAGGGATG	AGGAGGACCT	GGCGGATGAA	ATGATATGCA	TCACCACCTT	6660
45	GTAGCCGCCA	GGGAGGGGCA	GACTGGCTCT	GGCTTCAGGT	GGGGCGCAGG	AGAGCCAGGG	6720
	GAATAGTGGC	TCATAGTTAG	GAATAGTTAG	GCACTAGTTG	GGAGTAATAT	TCAATTAATT	6780
	AGACTTTTGT	ATAGAGAGTG	TCATGCTCTA	AGAAAGCCAT	AAACCTGGTA	GGAAACAGGT	6840
	CCAAGCGGTT	GAGCCTGGCA	GAGTACCATG	CGCTCGGCC	CAGCTGCAGG	AAACAGCAGG	6900
	CCCGGCCCTC	TCACAGAGGA	TGGGTGAGGA	GGCCAGACCT	GGCCTGCCCT	ATTGTCCAGA	6960
50	TGGGCACTGC	TGTGGAGCTC	GCTTCTCCCA	TGTACCAAGG	CACCAGGCC	ACCCAACTGA	7020
	AGGCAATGCG	GGGGGGTGCA	GGGGAAAGTT	AAAGGTGATG	ACGATCATCA	CACCTCGTGT	7080
	CGTTACTCTCA	GCCATCGGTC	TAGCATATCA	GTCACTGGGC	CCAACTATAT	CATTTTTAAA	7140
	CCCTTTCCCC	CAATACACT	CGCTCTCTGT	TCTGTTTTAG	CTGTCTGAA	ATA	

55 SEQ ID NO: 288 PFD2 Protein sequence  
Protein Accession #: A38198

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	RQAKAAQMS	TSAPPPVGLS	SQRKROQYAK	SKKQGNSSNS	RPARALFCLS	LNNPIRRACI	120
	SIVEMKPTDI	PILLAIAPNC	VALAIYIPFP	EDDSNSTHNN	LEKVEYAFLI	IFTVETFLKI	180
	IAYGLLLHPN	AYVRNGWNL	DFVIVIVGLF	SVILEQLTKE	TEGGNHSSGK	SGGFVDVKALR	240
	APRVLRPLRL	VSGVPSLQVV	LSNIIKAMVP	LLHIALLVLP	VIIYIAIIGL	ELF IGKMHKT	300
65	CFPADSDIVA	EEDPAPCAPS	GNGRQCTANG	TECRSGWVGP	NGGITNFDFN	AFAMLTVPQC	360
	ITMEGWTDVL	YWNDAIGWE	WFWYFVLSI	ILGSFFVLNL	VLGVLSGEPF	KEREKAKARG	420
	DFQKLRKQQ	LEEDLKGYLE	WITQAEIDIF	ENEEEGGEG	KRNTSMPTSE	TESVNTENVS	480
	GEENRGCCG	SLWCWRRRC	AAKAGPSGCR	RWCQAIKSK	LSRRWRRWNR	FNRRRCRAAV	540
	KSVTFYLVNI	VLVFLNLTIT	SSEHYNQPDW	LTQIQDIANK	VLLALFTCEM	LVRKYSGLGQ	600
	AYFVSLFNRF	DCPVVCGGTT	ETILVELEIM	SPLGISVPRC	VRLLRIKPVY	RHWTLSNLV	660
70	ASLLNSMKS	ASLLLLFLFL	IIIPSLLMQ	LPFGKFNDE	TQTKRSTFDN	FPQALLTVFP	720
	ILTGEDWNAV	MYDGMAYGG	PSSSGMIVCI	YFIILFIOGN	YILLNVFLAI	AVDNLDAES	780
	LNTAQKEEAE	EKERKKIARK	ESLENKKNK	PEVNQIANS	NKVTIDDDYE	EDEDKDPYFP	840
	CDVFGVEEZE	EEEDDEPEVP	ACPRPRRISE	LAKKELIAP	PEGSAFFILS	KTNPIRVGCH	900
75	KLINHHIFTN	LILVFDLSS	AALAAEDFIR	SBSFRNTILG	YFDYAFTAP	TVEILLKHTT	960
	FGAFLLKAGF	CNRYFNLLDM	LUVGVSLVSP	GIQSSAISVV	KILRVLRVLR	PLRAINRAG	1020
	LKHVQCVFV	ARTTGNLHMT	VTTLLQFMFA	CIGVQLFKGX	FYRCDTDEAK	NPEBCRGLPI	1080
	LYKDGVDVSP	VVRERINQNS	DFNFDNLVSA	MMALFTVSTP	EGWPALLYRA	IDSGNENIGP	1140
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80	KARPLRRYIP	KNFVQYKFWY	VVNSSPFYEM	MFVLMLNLT	CLAMQHYEQS	KMFNDAMDIL	1260
	NMVFYGVFTV	EMVLKVIAFK	PKGYPSDAWN	TFDSLIVIGS	IIDVASEAD	PTESERNVPVP	1320

5	TATPGNSEES	NRISITPFRL	FRVRLVRLKLL	SRGEGIRTL	WTFIKSFOAL	PYVALLIAML	1380
	FFIYAVIGMQ	MFGKVMARDN	NQINRNNNFQ	TFPQAVLLLF	RCATGEAWQE	IHLACLPGKL	1440
	CDPESDYNPG	EYTCGSNFA	IVYFISFYML	CAFLIINLFP	AVIMDNFDYL	TRDWSILGFH	1500
	HLDEPKRWS	EYDPEAKGRI	KHLDVVTLRL	RIQPFPLGPGK	LCPEHRAVCKR	LVAMNMLNS	1560
	DGTVMFNATL	PALVRTALKI	KTEGNLEQAN	EELRAVIRKI	WKTSMLKLD	QVFPAGDDE	1620
	VTVGKPYATF	LIQDYPRKFK	KRKEQGLVGK	YPAKMTIAL	QAGLRTLHDI	GPERRAISPC	1680
	DLQDDPEEET	KREEDDVFK	RNALLGNHV	NHVNDRRDS	LQQTNTTHRP	LHVQRPSIPP	1740
	ASDTEKPLFP	PAGNSVCNHN	HNHNSIGKQV	PTSTNANLNN	ANMSKAANGK	RPSIGNLEHV	1800
10	SENGHSHSHK	HDREPORRSS	VKRTRYVYET	IRSDSGDEQL	PTICREDPRI	HGVFRDPHCL	1860
	GEQEYFSSEE	CYEDDSPTW	SRQNYGYYSR	YFGRNIDSER	PRGYHHPQGF	LEDDDSFVUCY	1920
	DSRRSPRRRL	LPPTPASHRR	SSFNFECLEK	QSSQSEVPSS	PIPPERTALP	LHLMOQQTMA	1980
	VAGLDSKQK	KYSPSHSTRS	WATPPATPPY	RDWPCYTFPL	IQVEQSEALD	QVNGSLPSLH	2040
	RSSWYTDKPD	ISYRTPTPAS	LTVPSFPRNK	NSDKQRSADS	LVEAVLISEB	LGRYARDPKF	2100
15	VSATKREIAD	ACDLTIDEME	SAASTLLNGN	VRPRANGDVG	PLSHRQDYEL	QDFGPGYSDE	2160
	EPDFGRDEED	LADMEICITT	L				

## SEQ ID NO:289 OB16 DNA SEQUENCE

Nucleic Acid Accession#: NM\_002812

Coding sequence: 150-3382 (underlined sequence corresponds to start and stop codon)

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	C	C	T	C	A	G	C
	C	C	G	C	C	G	G
	C	C	A	T	T	C	C
	T	T	C	G	T	G	T
30	C	T	G	T	C	A	G
	A	C	G	G	C	C	G
	A	C	G	G	C	C	G
	A	A	G	C	C	C	G
	T	G	A	G	C	A	T
35	A	C	A	T	T	C	C
	A	T	G	T	C	A	G
	G	T	C	T	C	A	G
	G	C	A	G	C	C	G
	G	C	C	A	G	C	C
40	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
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	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
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	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
55	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
60	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
65	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
70	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
75	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
80	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
	G	C	C	A	G	C	C
	G	C	C	A	G	C	C



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CAGCATGATG	GGCAAGATCC	CTGTCTCTCT	GGGCCCTGAG	GTGCCCTAGT	GCAACAGGCA	3480
TTGCTGAGGT	CTGAGCAGGG	CCTGGCCTTT	CCTCCTCTTC	CTCACCTCA	TCCTTTGGGA	3540
GGCTGACTTG	GACCCAAACT	GGCGACTAG	GGCTTTGAGC	TGGCAGTTT	CCCTGCCAC	3600
CTCTCTCTCT	ATCAGGGACA	GTGTGGGTGC	CACAGGTAAC	CCCAATTCT	GGCCTCAAC	3660
TTCTCCCTCT	GACCGGTCC	AACCTCTGCC	CTCATCTGCC	AACCTTGCT	GGGGAGGCT	3720
AGGCTTGGGA	TGAGCTGGGT	TTGTGGGGAG	TTCTTAATA	TTCTCAAGT	CTGGCACAC	3780
AGGTTTAATG	AGTCTCTTGC	CCACTGGTCC	ACTTGGGGGT	CTAGACCAGG	ATTATAGAGG	3840
ACACAGCAAG	TGAGTCTCTC	CCACTCTGGG	CTTGTGCACA	CTGACCAGG	CCACGCTCT	3900
CCCCACCCTT	CTCTCCTTTC	CTCATCTTAA	GTGCCTGGCA	GATGAAGGAG	TTTTCAGGAG	3960
CTTTTGACAC	TATATAAACC	GCCCTTTTTC	TATGCACCAC	GGGCGGCTTT	TATATGTAAT	4020
TGCAGCGTGG	GGTGGGTGGG	CATGGGAGGT	AGGGGTGGGC	CCTGGAGATG	AGGAGGTGG	4080
GCCATCCTTA	CCCCACACTT	TTATTGTGTG	CGTTTTTGTG	TTGTTTTGTT	TTTTTGTGTT	4140
TGTTTTTGTG	TTTACACTCG	CTGCTCTCAA	TAAATAAGCC	TTTTTTTA		

SEQ ID NO:290 QB16 Protein sequence  
Protein Accession #: NP\_002812

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1	11	21	31	41	51	
MGAARGSPAR	PRRLPLLSVL	LLPLLGGTQT	AIVFIKQFSS	QDALQGRRAL	LRCEVEAPGP	60
VHYVWMLDGA	FVQDTERRFA	QSSLSFAAV	DRLDQSGTFQ	CVARDVDVGE	EARSANASFN	120
IKWIEAGFVV	LKHPASEAEI	QPQTQVTLRC	HIDGHPRTY	QWRDGTPLS	DGQSNHTVSS	180
KERNLTLRPA	GPEHSLGLYC	CAHSFQGAC	SSQNTLSIA	DESPARVLA	PQDVVARYE	240
EAMFHCQFSA	QPPPSLQWLF	EDETPITNRS	RPHLRRTATV	FANGSLLLTQ	VRPRNAGIYR	300
CIGQGRGFP	IILEATHLHA	EIEDMPLFEP	RVTAGSEER	VTCLFPKGLP	EPSVWWEHAG	360
VRLEPTEGRVY	QKHGELVLAN	LAESDAGVYT	CHAANLAGOR	RQDVMTIVAT	VPSWLKKPQD	420
SQLEBGKPGY	LDCLTQATPK	FTVVWYRNQM	LISEDSPFEV	FRNGTLRINS	VEVIDGTWYR	480
CMSTPAGSI	EAQARVQVLE	KLKFTPPPQP	QQCMFDRKA	TVPCSATGRE	KPTIKWERAD	540
GSSLPEWTFD	NAGTLHFARV	TRDDAGNYTC	IASNGPQQOI	RAHVQLTVAV	PITFKVEPER	600
TFVYQGRGFP	LQCEAQGDPK	PLIQWKGKDR	ILDPTKLGPR	MHIQNGSLV	IHDVAFEDSG	660
RYTCIAGNSC	NKHKTEAPLY	VVDKPVPEES	EGPGSPFPYK	MIQTIGLSVG	AAVAYIIAVL	720
GLMFYCKKRC	KAKRLQKQPE	GEPEMECLN	GGPLONGQPS	AEIQEVALT	SLGSGPAATN	780
KRSTSDRMKH	FPRSSLOPIT	TLGKSEFGEV	FLAKAQGLEE	GVAETLVLVK	SLQTKDEQQQ	840
LDPRRELEMP	GRLNHNVVR	LLGLCREAEP	HYMVLVYVDL	GDILQPLRIS	KSKDEKLKSO	900
PLSTRQKVAL	CTVALGMEH	LSNNRFVHKD	LAARNCLVSA	QRQVKVSALG	LSKDVYNSEY	960
YHFRQAWPL	RWMSPEAILB	GDFSTKSDVW	AFGLVMEVFP	THGEMPHGGQ	ADDEVVLADLQ	1020
AGKARLPQPE	GCPSKLYRLM	QRQWALSFKD	RPSFSEIASA	LGDSTVDSPK		

## SEQ ID NO:291 AAB1 DNA SEQUENCE

Nucleic Acid Accession #: NM\_002205  
Coding sequence: 1-3150 (underlined sequences correspond to start and stop codons)

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1	11	21	31	41	51	
ATGGGGAGCC	GGACGCCAGA	GTCCCTCTCT	CACGCGGTGC	AGCTGCGCTG	GGGCCCCCGG	60
CGCGACACCC	CGCTSSSTGCC	GCTGCTGTTC	CTGCTSSSTGC	CGCGGCCACC	CAGGGTCTGGG	120
GGCTTCAACT	TAGACGCGGA	GGCCCCAGCA	GTACTCTCGG	GGCCCCCGGG	CTCCTTCTTC	180
GGATTCTCAG	TGGAGTTTFA	CCGGCCGGGA	ACAGACGGGG	TCAGTGTGCT	GGTGGGAGCA	240
CCCAAGGCTA	ATACCAGCCA	CGCAGGAGTG	CTGCAGGGTG	GTGCTGTCTA	CCTCTGTCTC	300
TGGGGTGCAC	GCCCCACACA	GTGCACCCCC	ATTGAATTTC	ACAGCAAAAG	CTCTCGGCTC	360
CTGGAGTCTC	CAGTGTCCAG	CTCAGAGGGA	GAGGAGCCTG	TGGAGTACAA	GTCTCTGCAG	420
TGGTTCGGGG	CAACAGTTCG	AGCCCATGGC	TCCTCCATCT	TGGCATGCGC	TCCACTGTAC	480
AGCTGGCGCA	CAGAGAAGGA	GCCACTGAGC	GACCCCGTGG	GCACCTGCTA	CCTCTCCACA	540
GATAACTTCA	CCCGAATTC	GGAGTATGCA	CCCTGCCGCT	CAGATTTCAG	CTGGGCAGCA	600
GGACAGGGTT	ACTGCCAAGG	AGGCTTCAGT	GCCGAGTTCA	CCAAGACTGG	CCGTGTGGTT	660
TTAGTGGGAC	CAGGAAGCTA	TTTCTGGCAA	GGCCAGATCC	TGTCTGCCAC	TCAGGAGCAG	720
ATTGCAGAA	CTTATTACCC	CGAGTACCTG	ATCAACCTGG	TTCAGGGGCA	GCTGCAGACT	780
CGCCAGGCCA	GTTCATCTTA	TGATGACAGC	TACTAGGAT	ACTCTGTGCT	TGTTGGTGAA	840
TTCACTGGTG	ATGACACAGA	AGACTTTTGT	GCTGTGTGTC	CCAAAGGGAA	CCTCACTTAC	900
GGCTATGTCA	CCATCTTTAA	TGGCTCAGAC	ATTCTGATCC	TCTACAACTT	CTCAGGGGAA	960
CAGATGGGCT	CCTACTTTGG	CTATGCAGTG	GCCGCCACAG	ACGTCAATGG	GGACGGGCTG	1020
GATGACTTGC	TGGTGGGGGC	ACCCCTGCTC	ATGGATCGGA	CCCTGACGG	GCGGCTCAG	1080
GAGGTGGGCA	GGGTCTACCT	CTACTGTCAG	CACCCAGCTG	GCTATAGGCC	CACGCCACCC	1140
CTTACCTTCA	CTGGCCATGA	TGAGTTTGGC	CGATTTGGCA	GCTCCTTGAC	CCCCCTGGGG	1200
GACCTGGACC	AGGATGGCTA	CAATGATGTG	GCCATCGGGG	CTCCCTTTGG	TGGGGAGACC	1260
CAGCAGGGAG	TAGTGTTTGT	ATTTCCTGGG	GGCCAGGAGG	GGCTGGGCTC	TAGGCTTCC	1320
CAGGTTCTGC	AGCCCTCTGG	GGCAGCCAGC	CACACCCAG	ACTTCTTTGG	CTCTGCGCTT	1380
CGAGGAGGCC	GAGACCTGGA	TGGCAATGGA	TATCTGTATC	TGATTGTGGG	GTCTTTGGT	1440
GTGGACAAAG	CTGTGTATTA	CAGGGGCGGC	CCCATCGTGT	CCGCTAGTGC	CTCCCTCACC	1500
ATCTTCCCCG	CCATGTTCAA	CCCAGAGGAG	CGGAGCTGCA	GCTTAGAGGG	GAACCTCTGT	1560
GCCTGCATCA	ACCTTAGCTT	CTGCCCTAAT	GCTTCTGGAA	AACACGTGTC	TGACTCCATT	1620
GTTTTCACAG	TGGAACTTCA	GCTGGACTGG	CAGAAGCAGA	AGGGAGGGGT	ACGGCGGGCA	1680
CTGTTCCTGG	CCTCCAGGCA	GGCAACCTTG	ACCCAGACCC	TGCTCATCCA	GAATGGGGCT	1740
CGAGAGGATT	GCAGAGAGAT	GAAGATCTAC	CTCAGGAACG	AGTCAGAAAT	TGAGACAAA	1800
CTCTGCCCGA	TTCATATCGC	TCTCAACTTC	TCTTGGGACC	CCCAAGCCCC	AGTGGACAGC	1860
CACGGCCCTA	GGCCAGCCCT	ACATTATCAG	AGCAAGAGCC	GGATAGAGGA	CAAGGCTCAG	1920
ATCTGTGCTG	ACTGTGAGAGA	AGACAACATC	TGTGTGCTGT	ACCTGCAGCT	GGAAGTGTTC	1980



5 GGGGAGCAGA ACCATGTGTA CCTGGGTGAC AAGAATGCC TGAACCTCAC TTTCATGCC 2040  
 CAGAATGTGG GTGAGGGTGG CGCCTATGAG GCTGAGCTTC GGGTCACCGC CCCTCCAGAG 2100  
 GCTGAGTACT CAGGACTCGT CAGACACCCA GGAACCTTCT CCAGCCTGAG CTGTGACTAC 2160  
 TTTGCCGTGA ACCAGAGCGC CCTGCTGGTG TGTGACCTGG GCAACCCCAT GAAGGCAGGA 2220  
 10 GCCAGCTTGT GGGGTGGGCT TCGGTTTACA GTCCCTCATC TCCGGGACAC TAAGAAAACC 2280  
 ATCCAGTCTG ACTTCCAGAT CCTCAGCAAG AATCTCAACA ACTCGCAAG CGACGTGGTT 2340  
 TCCTTTTCGG TCTCCGTGGA GGCTCAGGCC CAGGTACACC TGAACGGTGT CTCCAAGCCT 2400  
 GAGGCAGTCG TATTTCCAGT AAGCGACTGG CATCCCGGAG ACCAGCCTCA GAAGGAGGAG 2460  
 GACCTGGGAC CTGCTGTCCA CCATGTCTAT GAGCTCATCA ACCAAGGCCC CAGCTCCATT 2520  
 15 AGCCAGGGTG TGTGGAACT CAGCTGTCCC CAGGCTCTGG AAGGTCAAGCA GCTCCTATAT 2580  
 GTGACCAGAG TTACGGGACT CAACTGCACC ACCAATCACC CCATTAAACC AAAGGGCCTG 2640  
 GAGTTGGATC CCGAGGGTTC CCTGCACCAC CAGCAAAAAC GGGAAAGTCC AAGCCGCAGC 2700  
 TCTGCTCTCT CGGACCTCA GATCTGAAA TGCCCGGAGG CTGAGTGTCT CAGGCTGCGC 2760  
 TGTGAGCTCG GGCCTCTGCA CCAACAAGAG AGCCAAAGTC TGCAGTTGCA TTTCGAGTC 2820  
 20 TGCGCCAAAG CTTCCTTGCA GCGGGAGCAC CAGCCATTTA GCCTGCAATG TGAGGCTGTG 2880  
 TACAAGCCCC TGAAGATGCC CTACCGAATC CTGCTCTGGC AGCTGCCCA AAAAGAGCGT 2940  
 CAGGTGGCCA CAGCTGTGCA ATGGACCAAG CAGAAAGGCA GCTATGGCGT CCCACTGTGG 3000  
 ATCATCATCC TAGCCATCCT GTTTGGCCTC CTGCTCCTAG GTCTACTCAT CTACATCCTC 3060  
 25 TACAAGCTTG GATTCTTCAA ACCCTCCCTC CCATATGGCA CCGCCATGGA AAAAGCTCAG 3120  
 CTCAGGCCTC CAGCCACCTC TGATGCTTGA

## SEQ ID NO:292 AAB1 Protein sequence:

Protein Accession #: NP\_002186

25 1 11 21 31 41 51  
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 MGSRTPESEF HAVQLRWGFR RRPFLPLLL LLLPFPFRVG GFNLDAEAPA VLSGPPGSEF 60  
 GFSVEYRREG TDCGVSLVGA PKANTSQGV LQGGAVYLCF WGAAPTQCTP IEFDSKGSRL 120  
 30 LESSLSSEEG EEPVEYKSLQ WFGATVRAHG SSILACAPLY SWRTEKEPLS DFVGTCTYLS 180  
 DNFTRLLLEYA PCRSDFSWAA GQGYCQGGFS AEFKTKGRVV LGSPGSPYFW QGILSATQEQ 240  
 IAESYYPEYL INLVGGQLQT RQASSIYDDS YLGYSVAUGE FSGDDTDFV AGVPKGNLYT 300  
 GYVITILNGSD IRSLYNFSGE QHASYFYGAV AATDVNGDGL DLLLVGAPLL MDRTFDGRPQ 360  
 35 BVGRVTVYLG HPAGIEPTPT LTLTGHDFFG RFGSSLLPLG DLLDQGVNDV AIGAPFGGET 420  
 QQGVVFPVFG GPGGLGSKPS QVLQPLAAS RTPDPFGSAL RGRDLGNG YPDLIVGSPG 480  
 VDKAVVYRGR FIVSASASLT IFPAMFNPEE RSCSLEGNPV ACINLSPLCN ASGKEVADSI 540  
 GFTVELQLDW QKQGGVRRRA LFLASRQATL TQTLILQNGA REDCREMKTY LRNESEFRDK 600  
 LSPITHALNF SLDPQAPVDS HGLRPALEYQ SKSRIEDKAQ ILLDCGEDNI CVPDLQLEVF 660  
 40 GEQNHVYVLD KNALNLTFHA QNVGEGGAYE AELRVTAFFE AYSGLVRHP GNFSSLSVDY 720  
 FAVNQSRLLV CDLGNFMKAG ASLWGGRLFT VPELRDTKKT IQDFQILSK NLNNSQSDVV 780  
 SFRLSVEAGA QVTLNGVSKP EAVLFVPSDW HPRDQPKKEE DLGPAVHHIV ELINQGPSSI 840  
 SQGVLELSCP QALEGQQLLY VTRVTGLNCT TNHPIPNKGL ELDPEGSLHH QKREAPSR 900  
 SASSGQQLK CPBACFRLR CELGPLEQOE SQSLQLHFRV WARTFLQREH QPPLQCEAV 960  
 45 YKALKMPYRI LPRQLPQKER QVATAVQWTK AEGSYGVPLW IILAILFL LLLGLLTYIL 1020  
 YKLGFPKRSI PYGTAMERAK LKPPATSDA

## SEQ ID NO:293 LBH4 DNA SEQUENCE

Nucleic Acid Accession #: BC001291

Coding sequence: 44-541 (start and stop codons are underlined)

50 1 11 21 31 41 51  
 | | | | |  
 55 GGGGGGCGCG CGCGCTGACC CTCCTGGGC ACCGCTGGGG ACGATGGGCG TGCTCGCCTT 60  
 GCTGCTGGTC GTGGCCCTAC CGCGGGGTGT GACAGACGCC AACCTGACTG CGAGACAACG 120  
 AGATCCAGAG GACTCCGACG GAACGGACGA GGGTGACAA ATAGTGTGGT GTCATGTTTG 180  
 60 TGAGAGAGAA AACACTTTCC AGTGCCAGAA CCAAGGAGG TGCAATGGA CAGAGCCATA 240  
 CTGCGTTATA GCGGCGGTGA AAATATTTCC ACGTTTTTTC ATGGTTGCGA AGCAGTGCTC 300  
 CGCTGGTTGT GCAGCGATGG AGAGACCCAA GCCAGAGGAG AAGCGGTTTC TCTTGGAAGA 360  
 GCCCATGCCC TTCTTTTACC TCAAGTGTG TAAAAATCGC TACTGCAAT TAGAGGGGGC 420  
 65 AOCATCAAC TCATCAGTGT TCAAGAATA TGCTGGGAGC ATGGGTGAGA GCTGTGGTGG 480  
 GCTGTGGCTG GCATCTCCTC TGCTGCTGGC CTCCATTGCA GCGGGCTCA GCTGTCTTIG 540  
 AGCCACGGGA CTGCCACAGA CTGAGCCTTC CGGAGCATGG ACTCGCTCCA GACCGTTGTC 600  
 AOCCTGTTGA TTAACCTTGT TTTCTGTTGA TTAACCTTGT GTTTGACTTC CCAGGGTCTT 660  
 GGGATGGGAG AGTGGGGATC AGGTGCAGTT GGCTCTTAAC CCTCAAGGGT TCTTTAACTC 720  
 70 ACATTACAGG GAAGTCCAGA TCTCCTGAGT AGTGATTTTG GTGACAAGTT TTTCTCTTGT 780  
 AAATACAACC TTGTAACTCA TTTATTGCTG ATGGCCACTC TTTCTCTGA CTCCTCTG 840  
 CCTCTGAGGG CTTCAGTATT GATGGGGAGG GAGGCCAAG TACCCTCAT GGAGAGTATG 900  
 TGCTGAGATG CTTCGACCTT TTAGGTGAC GCAGGAACAC TGGGGGAGTC TGAATGATTG 960  
 GGGTGAAAGAC ATCCCTGGAG TGAAGGACTC CTCAGCATGG GGGGCAGTGG GGCACACGTT 1020  
 AGGGCTGCCC CCATTCCAGT GGTGGAGGCG CTGTGGATGG CTGCTTTTCC TCAACCTTTC 1080  
 75 CTACAGATT CCAGGAGGCA GAAGATAACT AATTGTGTG AAGAACTTA GACTTCAACC 1140  
 ACCAGCTGGC ACAGGTGCAC AGATTCTAA ATTCACACAC GTGTGTGTTC AACATCTGAA 1200  
 ACTTAGGCCA AGTAGAGAGC ATCAGGGTAA ATGGCGTTCA TTTCTCTGTT AAGATGCAGC 1260  
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 TTCAAAAGTT CACGAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAA

SEQ ID NO:294 LBH4 Protein sequence:  
Protein Accession #: AAH01291

5       1       11       21       31       41       51  
|       |       |       |       |       |  
MALLALLLVV ALPRVWTDAN LTARQDPED SQRTEGDNR VWCHVCEREN TFECQNPRRC 60  
10 KWTEPYCVIA AVKIFPRFFM VAKQCSAGCA AMERPKPEEK RFLLEFPMPF FYLKCCCKIRY 120  
CNLEGPPINS SVFKEYAGSM GESCGGLWLA ILLLLASIAA GLSLG

15                   It is understood that the examples described above in no way serve to limit the  
true scope of this invention, but rather are presented for illustrative purposes. All  
publications, sequences of accession numbers, and patent applications cited in this  
specification are herein incorporated by reference as if each individual publication or patent  
20 application were specifically and individually indicated to be incorporated by reference.

WHAT IS CLAIMED IS:

- 1                    1.        A method of detecting a prostate cancer-associated transcript in a cell  
2        from a patient, the method comprising contacting a biological sample from the patient with a  
3        polynucleotide that selectively hybridizes to a sequence at least 80% identical to a sequence  
4        as shown in Tables 1-16.
- 1                    2.        The method of claim 1, wherein the polynucleotide selectively  
2        hybridizes to a sequence at least 95% identical to a sequence as shown in Tables 1-16.
- 1                    3.        The method of claim 1, wherein the biological sample is a tissue  
2        sample.
- 1                    4.        The method of claim 1, wherein the biological sample comprises  
2        isolated nucleic acids.
- 1                    5.        The method of claim 4, wherein the nucleic acids are mRNA.
- 1                    6.        The method of claim 4, further comprising the step of amplifying  
2        nucleic acids before the step of contacting the biological sample with the polynucleotide.
- 1                    7.        The method of claim 1, wherein the polynucleotide comprises a  
2        sequence as shown in Tables 1-16.
- 1                    8.        The method of claim 1, wherein the polynucleotide is labeled.
- 1                    9.        The method of claim 8, wherein the label is a fluorescent label.
- 1                    10.      The method of claim 1, wherein the polynucleotide is immobilized on  
2        a solid surface.
- 1                    11.      The method of claim 1, wherein the patient is undergoing a therapeutic  
2        regimen to treat prostate cancer.
- 1                    12.      The method of claim 1, wherein the patient is suspected of having  
2        prostate cancer.

- 1                   13.    A method of monitoring the efficacy of a therapeutic treatment of  
2 prostate cancer, the method comprising the steps of:  
3                   (i) providing a biological sample from a patient undergoing the therapeutic  
4 treatment; and  
5                   (ii) determining the level of a prostate cancer-associated transcript in the  
6 biological sample by contacting the biological sample with a polynucleotide that selectively  
7 hybridizes to a sequence at least 80% identical to a sequence as shown in Tables 1-16,  
8 thereby monitoring the efficacy of the therapy.
- 1                   14.    The method of claim 13, further comprising the step of: (iii) comparing  
2 the level of the prostate cancer-associated transcript to a level of the prostate cancer-  
3 associated transcript in a biological sample from the patient prior to, or earlier in, the  
4 therapeutic treatment.
- 1                   15.    The method of claim 13, wherein the patient is a human.
- 1                   16.    A method of monitoring the efficacy of a therapeutic treatment of  
2 prostate cancer, the method comprising the steps of:  
3                   (i) providing a biological sample from a patient undergoing the therapeutic  
4 treatment; and  
5                   (ii) determining the level of a prostate cancer-associated antibody in the  
6 biological sample by contacting the biological sample with a polypeptide encoded by a  
7 polynucleotide that selectively hybridizes to a sequence at least 80% identical to a sequence  
8 as shown in Tables 1-16, wherein the polypeptide specifically binds to the prostate cancer-  
9 associated antibody, thereby monitoring the efficacy of the therapy.
- 1                   17.    The method of claim 16, further comprising the step of: (iii) comparing  
2 the level of the prostate cancer-associated antibody to a level of the prostate cancer-  
3 associated antibody in a biological sample from the patient prior to, or earlier in, the  
4 therapeutic treatment.
- 1                   18.    The method of claim 16, wherein the patient is a human.

- 1                   19.     A method of monitoring the efficacy of a therapeutic treatment of  
2 prostate cancer, the method comprising the steps of:  
3                   (i) providing a biological sample from a patient undergoing the therapeutic  
4 treatment; and  
5                   (ii) determining the level of a prostate cancer-associated polypeptide in the  
6 biological sample by contacting the biological sample with an antibody, wherein the antibody  
7 specifically binds to a polypeptide encoded by a polynucleotide that selectively hybridizes to  
8 a sequence at least 80% identical to a sequence as shown in Tables 1-16, thereby monitoring  
9 the efficacy of the therapy.
- 1                   20.     The method of claim 19, further comprising the step of: (iii) comparing  
2 the level of the prostate cancer-associated polypeptide to a level of the prostate cancer-  
3 associated polypeptide in a biological sample from the patient prior to, or earlier in, the  
4 therapeutic treatment.
- 1                   21.     The method of claim 19, wherein the patient is a human.
- 1                   22.     An isolated nucleic acid molecule consisting of a polynucleotide  
2 sequence as shown in Tables 1-16.
- 1                   23.     The nucleic acid molecule of claim 22, which is labeled.
- 1                   24.     The nucleic acid of claim 23, wherein the label is a fluorescent label
- 1                   25.     An expression vector comprising the nucleic acid of claim 22.
- 1                   26.     A host cell comprising the expression vector of claim 25.
- 1                   27.     An isolated polypeptide which is encoded by a nucleic acid molecule  
2 having polynucleotide sequence as shown in Tables 1-16.
- 1                   28.     An antibody that specifically binds a polypeptide of claim 27.
- 1                   29.     The antibody of claim 28, further conjugated to an effector component.

- 1                   30.     The antibody of claim 29, wherein the effector component is a  
2     fluorescent label.
- 1                   31.     The antibody of claim 29, wherein the effector component is a  
2     radioisotope or a cytotoxic chemical.
- 1                   32.     The antibody of claim 29, which is an antibody fragment.
- 1                   33.     The antibody of claim 29, which is a humanized antibody
- 1                   34.     A method of detecting a prostate cancer cell in a biological sample  
2     from a patient, the method comprising contacting the biological sample with an antibody of  
3     claim 28.
- 1                   35.     The method of claim 34, wherein the antibody is further conjugated to  
2     an effector component.
- 1                   36.     The method of claim 35, wherein the effector component is a  
2     fluorescent label.
- 1                   37.     A method of detecting antibodies specific to prostate cancer in a  
2     patient, the method comprising contacting a biological sample from the patient with a  
3     polypeptide encoded by a nucleic acid comprises a sequence from Tables 1-16.
- 1                   38.     A method for identifying a compound that modulates a prostate cancer-  
2     associated polypeptide, the method comprising the steps of:  
3                   (i) contacting the compound with a prostate cancer-associated polypeptide, the  
4     polypeptide encoded by a polynucleotide that selectively hybridizes to a sequence at least  
5     80% identical to a sequence as shown in Tables 1-16; and  
6                   (ii) determining the functional effect of the compound upon the polypeptide.
- 1                   39.     The method of claim 38, wherein the functional effect is a physical  
2     effect.

- 1                   40.    The method of claim 38, wherein the functional effect is a chemical  
2   effect.
- 1                   41.    The method of claim 38, wherein the polypeptide is expressed in a  
2   eukaryotic host cell or cell membrane.
- 1                   42.    The method of claim 38, wherein the functional effect is determined by  
2   measuring ligand binding to the polypeptide.
- 1                   43.    The method of claim 38, wherein the polypeptide is recombinant.
- 1                   44.    A method of inhibiting proliferation of a prostate cancer-associated  
2   cell to treat prostate cancer in a patient, the method comprising the step of administering to  
3   the subject a therapeutically effective amount of a compound identified using the method of  
4   claim 38.
- 1                   45.    The method of claim 44, wherein the compound is an antibody.
- 1                   46.    The method of claim 45, wherein the patient is a human.
- 1                   47.    A drug screening assay comprising the steps of  
2                   (i) administering a test compound to a mammal having prostate cancer or a  
3   cell isolated therefrom;  
4                   (ii) comparing the level of gene expression of a polynucleotide that selectively  
5   hybridizes to a sequence at least 80% identical to a sequence as shown in Tables 1-16 in a  
6   treated cell or mammal with the level of gene expression of the polynucleotide in a control  
7   cell or mammal, wherein a test compound that modulates the level of expression of the  
8   polynucleotide is a candidate for the treatment of prostate cancer.
- 1                   48.    The assay of claim 47, wherein the control is a mammal with prostate  
2   cancer or a cell therefrom that has not been treated with the test compound.
- 1                   49.    The assay of claim 47, wherein the control is a normal cell or mammal.

1                   50.     A method for treating a mammal having prostate cancer comprising  
2     administering a compound identified by the assay of claim 47.

1                   51.     A pharmaceutical composition for treating a mammal having prostate  
2     cancer, the composition comprising a compound identified by the assay of claim 47 and a  
3     physiologically acceptable excipient.

1                   52.     The method according to claim 1, wherein said biological sample is  
2     contacted with a plurality of polynucleotides comprising a first polynucleotide that  
3     selectively hybridizes to a sequence at least 80% identical to a first sequence as shown in  
4     Tables 1-16; and a second polynucleotide that selectively hybridizes to a second sequence at  
5     least 80% identical to a second sequence as shown in Tables 1-16.

1                   53.     A method according to claim 52, wherein the plurality of  
2     polynucleotides comprises a third polynucleotide that selectively hybridizes to a sequence at  
3     least 80% identical to a third sequence as shown in Tables 1-16..

1                   54.     A method of detecting a prostate cancer associated transcript, the  
2     method comprising contacting a biological sample from the patient with a plurality of  
3     polynucleotides wherein at least two of said polynucleotides selectively hybridize to a  
4     difference sequence at least 80% identical to a sequence as shown in Tables 1-16.

1                   55.     A method of detecting a prostate cancer, the method comprising the  
2     steps of:  
3                   (i) providing a biological sample from a patient;  
4                   (ii) contacting the biological sample with a first polynucleotide that selectively  
5     hybridizes to a sequence at least 80% identical to a first sequence as shown in Tables 1-16 to  
6     determine the level of a prostate cancer-associated transcript in the biological sample; and  
7     with a second polynucleotide that selectively hybridizes to a second sequence at least 80%  
8     identical to a sequence not shown in Tables 1-16; wherein the expression of said second  
9     sequence is not substantially changed in prostate cancer, to determine the level of expression  
10    of a control transcript in the biological sample;



11 (iii) comparing the level of the prostate cancer-associated transcript to a level  
12 of the normal tissue associated transcript in the biological sample.

1 56. A method of quantitating a prostate cancer-associated transcript in a  
2 cell from a patient, the method comprising contacting a biological sample from the patient  
3 with a polynucleotide that selectively hybridizes to a sequence at least 80% identical to a  
4 sequence as shown in Tables 1-16.

1 57. The method of claim 56, wherein the polynucleotide selectively  
2 hybridizes to a sequence at least 95% identical to a sequence as shown in Tables 1-16.

1 58. The method of claim 56, wherein the biological sample is a tissue  
2 sample.

1 59. The method of claim 56, wherein the biological sample comprises  
2 isolated nucleic acids.

1 60. The method of claim 56, wherein the nucleic acids are mRNA.

1 61. The method of claim 59, further comprising the step of amplifying  
2 nucleic acids before the step of contacting the biological sample with the polynucleotide.

1 62. The method of claim 56, wherein the polynucleotide comprises a  
2 sequence as shown in Tables 1-16.

1 63. The method of claim 56, wherein the polynucleotide is labeled.

1 64. The method of claim 63, wherein the label is a fluorescent label.

1 65. The method of claim 56, wherein the polynucleotide is immobilized on  
2 a solid surface.

1 66. The method of claim 56, wherein the patient is undergoing a  
2 therapeutic regimen to treat metastatic prostate cancer.

1 67. The method of claim 56, wherein the patient is suspected of having  
2 metastatic prostate cancer.

1                   68.     A biochip comprising a plurality of polynucleotides that selectively  
2     hybridize to a sequence at least 80% identical to a sequence as shown in Tables 1-16.

1                   69.     A method of screening drug candidates comprising:  
2                   i) providing a cell that expresses an expression profile gene selected from the  
3     group consisting of an expression profile gene set forth in Tables 1-16 or fragment thereof;  
4                   ii) adding a drug candidate to said cell; and  
5                   iii) determining the effect of said drug candidate on the expression of said  
6     expression profile gene.

1                   70.     A method according to claim 59 wherein said determining comprises  
2     comparing the level of expression in the absence of said drug candidate to the level of  
3     expression in the presence of said drug candidate.

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